



Taming the green-eyed monster: Temporal responsivity to cognitive behavioural and cognitive analytic therapy for morbid jealousy

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Objectives. Credible evaluations of the psychological treatment of morbid jealousy are rare. The aim of this study was to evaluate temporal responsivity to cognitive behavioural therapy (CBT) and cognitive analytic therapy (CAT) for morbid jealousy.

Design. The methodology involved matched A/B single-case experimental designs (SCED) with extended follow-up, in which two patients and their partners completed daily jealousy target symptom items across the phases of the study. Patients also completed traditional psychometric outcome measures at assessment, post-therapy, and at final follow-up.

Methods. Both patients received the same number of assessment ($n = 3$), treatment ($n = 13$), and follow-up ($n = 1$) sessions.

Results. Autoregressive Integrated Moving Average (ARIMA) models of the patients' daily target symptom jealousy SCED data indicate the effectiveness of the CAT intervention and the ineffectiveness of the CBT intervention, but both therapies produced large effect sizes. The partner of the CBT patient felt less controlled following therapy, whilst the partner of CAT patient did not perceive any change to his partner.

Conclusion. The discussion calls for a stronger evidence base for the psychological treatment of morbid jealousy to be constructed and debates the routine measurement of outcomes for partners of morbidly jealous patients.

Practitioner points

- Measuring outcomes for partners of jealous patients is indicated.
- CAT shows promise as an intervention for morbid jealousy.
- The evidence base for the treatment of morbid jealousy requires further development.

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Jealousy appears part and parcel of intimate relationships (DeSteno, Valdesolo, & Barlett, 2006), the absence of which indicates pathological tolerance or submissiveness (Pinta, 1978). Tarrier, Beckett, Harwood, and Bishay (1990) conceptualized a jealousy continuum, ranging from that of normal jealousy (a reality-based and transient reaction) to morbid jealousy (a mental preoccupation with infidelity, resistant to corrective evidence). At its morbid extreme, jealousy appears associated with severe relational, psychological, and emotional difficulties (White & Mullen, 1989). Morbid jealousy is particularly associated with risk of limiting/controlling (Davis, Ace, & Andra, 2000; Johnson & Hotton, 2003) and hostile/abusive behaviours (Schackelford, 2001), including that of stalking (Cupach & Spitzberg, 1998) and partner violence (Foran & O'Leary, 2008).

Jealousy involves the fear of the relationship being usurped by a rival (DeSteno, 2004) and is associated with desperate efforts to 'protect' the relationship (Salovey, 1991). Jealousy in males tends to be elicited by status-related characteristics, whereas for females' jealousy is more often evoked by physical attractiveness (Buunk & Dijkstra, 2004). Fear-based attentional (Intili & Tarrier, 1998) and perceptual (Sharpsteen, 1995) bias warrants the consistent misinterpretation of partner actions (Leahy & Tirsch, 2008) and the proliferation of surveillance-type 'confirmatory' behaviours (DeSteno & Salovey, 1996; Guerrero & Afifi, 1999), such as consistently checking underwear for signs of sexual activity. Attentional and perceptual bias typically occurs in the context of personality traits such as low self-confidence, low self-esteem, and chronic emotional insecurity (DeSteno *et al.*, 2006; Dolan & Bishay, 1996a).

Whilst theories regarding the genesis and maintenance of morbid jealousy abound (Keenan & Farrell, 2000), currently there is no methodologically sound evidence to suggest the superiority of a single psychotherapy modality over another for morbid jealousy (DeSteno *et al.*, 2006). The modality with the greatest evidence of effectiveness with morbid jealousy is that of cognitive behavioural therapy (CBT), with the extant CBT studies tending to form a small body of mostly practice-based evidence (Barkham *et al.*, 2008), due to the lack of randomized-controlled trials. Cobb and Marks (1979) used a purely behavioural approach with four patients, three of whom improved in terms of reduced jealousy behaviours. Bishay, Petersen, and Tarrier (1989) used cognitive therapy with 13 jealous patients and found improvements in 10 of the sample. Dolan and Bishay (1996b) conducted individual cognitive therapy with morbidly jealous outpatients ($n = 30$) in a waiting list control study and illustrated that both patients and their partners perceived improvements to jealousy following treatment that remained apparent at follow-up. The credible evaluation of other psychological treatments for morbid jealousy has been either absent or stagnant (Leary & Tirsch, 2008). However, the absence of effectiveness evidence for other psychotherapies for morbid jealousy need not be seen as evidence of absence of effectiveness (Sober, 2008). Regardless of modality, jealousy tends to be viewed as having a generally poor prognosis (McKenna, 1984) and being clinically difficult to treat (Bishay *et al.*, 1989).

The current study employed matched single-case experimental designs (SCED; Barlow, Andrasik, & Hersen, 2008) to evaluate the temporal responsivity of two morbidly jealous patients to CBT (Tarrier *et al.*, 1990) and cognitive analytic therapy (CAT; Ryle, 1991, 1995, 1997, 2004, Ryle & Kerr, 2002). The use of CAT as a treatment option was justifiable, due to the following factors: (a) the evidence base for CBT is not sufficient to rule out testing another therapy, (b) CAT has been shown to produce similar outcomes to CBT in routine settings (Marriott & Kellett, 2009), (c) CAT is an interpersonal cognitive therapy (Ryle, 2004) which appears suited to treating morbid jealousy due to its distinct maladaptive interpersonal features (DeSteno, 2004), and finally (d) should CAT be found

to be effective, it would stimulate larger more controlled studies. The study reported here is unique because of three factors: (1) no SCEDs have previously been conducted regarding the treatment of morbid jealousy, (2) partners completed matched SCEDs enabling the comparison of patient-partner experiences throughout morbid jealousy treatment episodes, and (3) the collection of SCED data provides insight into the shape of change during the time course of therapy for morbid jealousy.

Experimental hypotheses for the study were:

- H1:* Psychological therapy (both CBT and CAT) will effectively reduce the daily experience of jealousy, partner hypervigilance, jealous disinhibition, and anxiety and increase self-esteem during active treatment and follow-up stages, compared to baseline phase.
- H2:* Partners of patients will report less jealousy and controlling behaviour in the patients whilst they undergo treatment, compared to the baseline phase.

Method

Patient and therapist details

Both female patients presented with severe lifelong morbid jealousy across all romantic relationships and chronic low self-esteem. Both patients were married with children and were seeking psychological help due to chronic relationship difficulties. The CBT patient reported a childhood that contained the loss of her father due to a sudden brain haemorrhage, a cold rejecting mother, and being the victim of chronic sexual and physical abuse from her stepfather. The CAT patient reported a childhood in which emotions were generally repressed, a cold rejecting mother, and a general lack of emotional nurturance. Both patients reported a deep and abiding distrust and fear of rejection/abandonment by their partners through infidelity that prompted the use of high-frequency compensatory behaviours, including: (1) checking of clothes for signs of sexual activity, (2) checking mobile phones for any contact with women, (3) cross-examining their partners' on their movements and activities, (4) accompanying their partners wherever possible, (5) low-level stalking, and (6) limiting their partner's exposure to perceived sexual material in print media and on television. Neither patient was treated pharmacologically at any point of contact nor had comorbid obsessive-compulsive disorder (OCD). The patients were provided with written information on CBT and CAT and chose which intervention they would prefer to engage in. The CAT therapy information emphasized the active, collaborative, and reformulatory approach to change and the CBT therapy information on the learning of new coping methods in the here and now to cope differently with chronic emotional problems. The CBT patient had received some private CBT previously for the morbid jealousy, which was stated as wholly ineffective, but noted that she wished again to pursue a therapy that worked in the here and now. The CBT patient had not therefore sought or received any therapy for the childhood sexual abuse.

The therapist (SK) was a Consultant Clinical Psychologist, who had 9 years fulltime post-qualification adult mental health experience in a psychological therapy service in a UK National Health Service (NHS) Trust at the time of the conduct of the cases. The therapist had additional post-doctoral training to Practitioner and Supervisor status in

CAT with Association of Cognitive Analytic Therapy (ACAT) and British Association for Behavioural and Cognitive Psychotherapies (BABCP) accreditation as a Cognitive-Behavioural Psychotherapist.

Design and measures

The study included three distinct phases; an assessment phase prior to starting treatment (*baseline*), a treatment phase (*therapy*), and a follow-up phase, where there was no contact with the patients (*follow-up*). In the 'A/B' SCED methodology (Barlow *et al.*, 2008), the patients and partners completed identical daily monitoring diaries measuring morbid jealousy symptoms across study phases. Morbid jealousy symptoms therefore constituted the 'target symptom measures' (Morley, 1996) for patients and their partners in the SCED. Five target symptom items were designed with the patients: jealousy (*I have felt jealous today*), hypervigilance (*I have been watching/observing X today*), disinhibition (*I have acted out my jealousy today with X*), anxiety (*I have felt anxious today*), and self-esteem (*In terms of how I have felt about myself, today I have felt ...*). Two target symptom items were designed with partners: patient jealousy (*X has been jealous today*) and feeling controlled (*I have felt controlled by X today*). All target symptom items were scored using a 1–9 likert scale anchored at 1 'not at all' and 9 'totally'. The self-esteem item had the anchor of 1 'rubbish' and 9 'great'. The measures were offered in the cases as a simple and effective manner of measuring jealousy over time. Partners were posted target symptom diaries and provided with instructions concerning completion. Patients and partners were advised to complete the diaries at the end of each day, during which they would reflect on the events and processes of that day. They were instructed not to discuss or compare the item ratings and to refrain from using the item ratings in any aggressive manner, should there be any conflict in the relationship. Patients brought target symptom item diaries to sessions and partners posted back their responses. The therapist did not discuss the content of the diaries during sessions, unless the patient directly indicated that they wished to do so. Patients and partners were requested not to complete SCED items retrospectively.

Both patients received 17 sessions in total: three assessment sessions during baseline, 13 treatment sessions during therapy, and a single follow-up session at the end of the 3-month follow-up period. Treatment duration and number of follow-ups were set by the CAT treatment model for 'neurotic' problems (Ryle, 1991, 1995), as that of 16 sessions (three sessions to assess and reformulate and 13 to treat) plus one follow-up session. The CBT treatment contract was therefore matched to the CAT treatment contract, as there is no empirical evidence to suggest a specific CBT treatment duration for morbid jealousy and to ensure that the patients received equal 'doses' of therapy. Treatment sessions were twice weekly in the CBT case and once weekly in the CAT case; consequently, the CBT therapy period was shorter than the CAT case in days, but not sessions. For the CBT patient, baseline (A) lasted 6 weeks (44 days, straddling assessment sessions 1–3), therapy (B) lasted 8 weeks (51 days, straddling treatment sessions 4–16), and follow-up lasted 12 weeks (84 days). The CBT patient missed 2 days of data during baseline (1% of data missing). The partner of the CBT patient collected matched data across baseline (44 days; A) and therapy (51 days; B) only. No data were missing for the CBT partner. For the CAT patient, baseline lasted 5 weeks (35 days, straddling assessment sessions 1–3), therapy lasted 14 weeks (98 days, straddling treatment sessions 4–16), and follow-up lasted 12 weeks (84 days). The CAT patient missed one measure on 1 day during follow-up (< 1% of data missing). The partner of the CAT patient collected matched data across baseline (35 days; A) and therapy (98 days; B) only. The CAT partner missed

1 day of data during baseline (< 1% of data missing). The number of observations in all four baselines satisfied requirements for adequate baseline duration (Barlow *et al.*, 2008; Huitema, 1985).

Patients also completed a range of validated self-report measures of psychological functioning at their initial assessment session, on termination of treatment, and also at the final follow-up session. These measures were the Global Severity Index (GSI) of the Brief Symptom Inventory (BSI; Derogatis, 1993), the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1995), and the Inventory of Interpersonal Problems-32 (IIP-32; Barkham, Hardy, & Startup, 1994). At the same timepoints, morbid jealousy was assessed by the Romantic Jealousy Questionnaire (RJQ; Pines, 1992) and the Prestwich Jealousy Scale (PJQ; Beckett, Tarrier, Intili, & Beech, 1992).

Case formulation and treatment

Both patients received idiosyncratic formulations at session 4 – indicating the start of treatment in the SCEDs. For the CAT patient, the formulation was a narrative reformulation and for the CBT patient, a diagrammatic reformulation. The CAT patient received a sequential diagrammatic reformulation (Ryle, 1991, 1995) at session 6. As is consistent with the CAT model (Ryle, 1991, 1995), the patient and therapist exchanged ‘goodbye letters’ at session 16 that summarized and reflected on the key changes that had occurred, the significance of the ending, the challenges that lay ahead, and the nature of the contribution of the therapeutic relationship (Kellett, *in press*). Diagrams 1 and 2 contain the CAT and CBT diagrammatic case formulations respectively.

Treatment in the CAT case was preceded by a recognition phase whereby the patient was encouraged during homework to recognize and record when they were enacting certain reciprocal roles (e.g., when they were ignoring of their own emotions or others family members’ feelings, see diagram 1) or when certain problem procedures were being enacted (e.g., the patients response to when they were flooded with sexual images of their partner with other women and the assumption that the images must be true, see diagram 1). As CAT is an interpersonal form of cognitive therapy that makes frequent and active use of the therapeutic relationship (Kellett, *in press*), the patient and therapist voiced and reflected on when any of the key reciprocal roles were evident and active in the therapeutic relationship, during indicated rupture-repair sequences (Daly, Llewelyn, McDougall, & Chanen, 2010). For example, the patient voiced a fear early in treatment about the end of therapy and the fear of abandonment by the therapist, which was traced onto the diagrammatic formulation via the abandoning-abandoned reciprocal role. Treatment approaches in CAT are broad-based and allow for cognitive, behavioural, affective, and interpersonal exits from the diagrammatic formulation to be collaboratively developed and practiced with the patient (Ryle, 1991). The treatment approaches and associated exits specific to the CAT case were as follows: change 1, developing loving behavioural reactions and responses to her children, to exit the ignoring-alone reciprocal role; change 2, to cognitively challenge the evidence that her partner will leave should he be given any opportunity, to exit the abandoning-abandoned reciprocal role; change 3, to engage in exposure and response prevention to checking behaviour, to exit the controlling-controlled reciprocal role; change 4, assertiveness training, to exit the bully-victim reciprocal role, and change 5, developing distraction techniques, as an exit from the flooded with sexual images state and cognitively challenging the assumption that the image was a representation of reality.

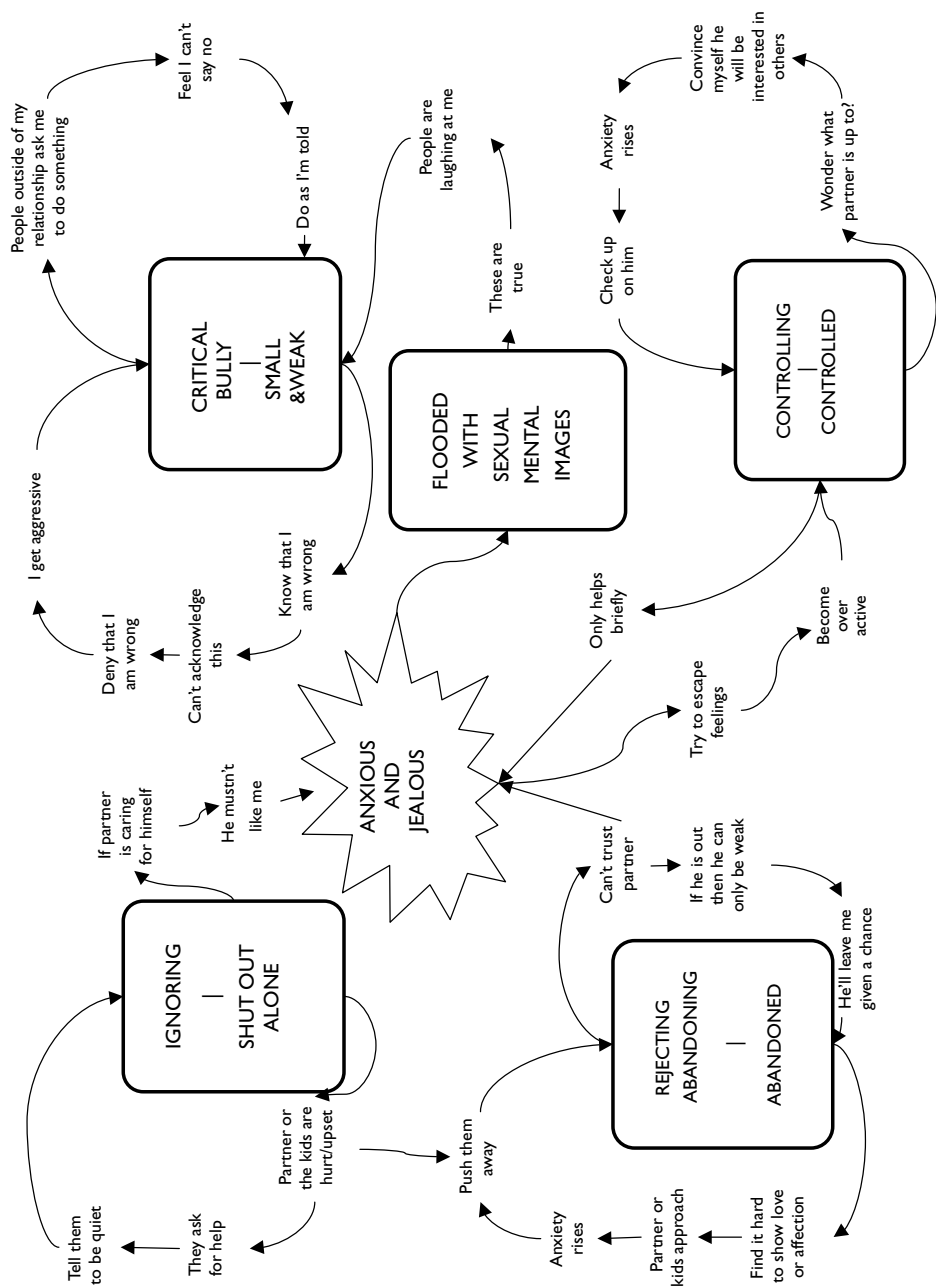


Diagram I: CAT Case diagrammatic formulation.

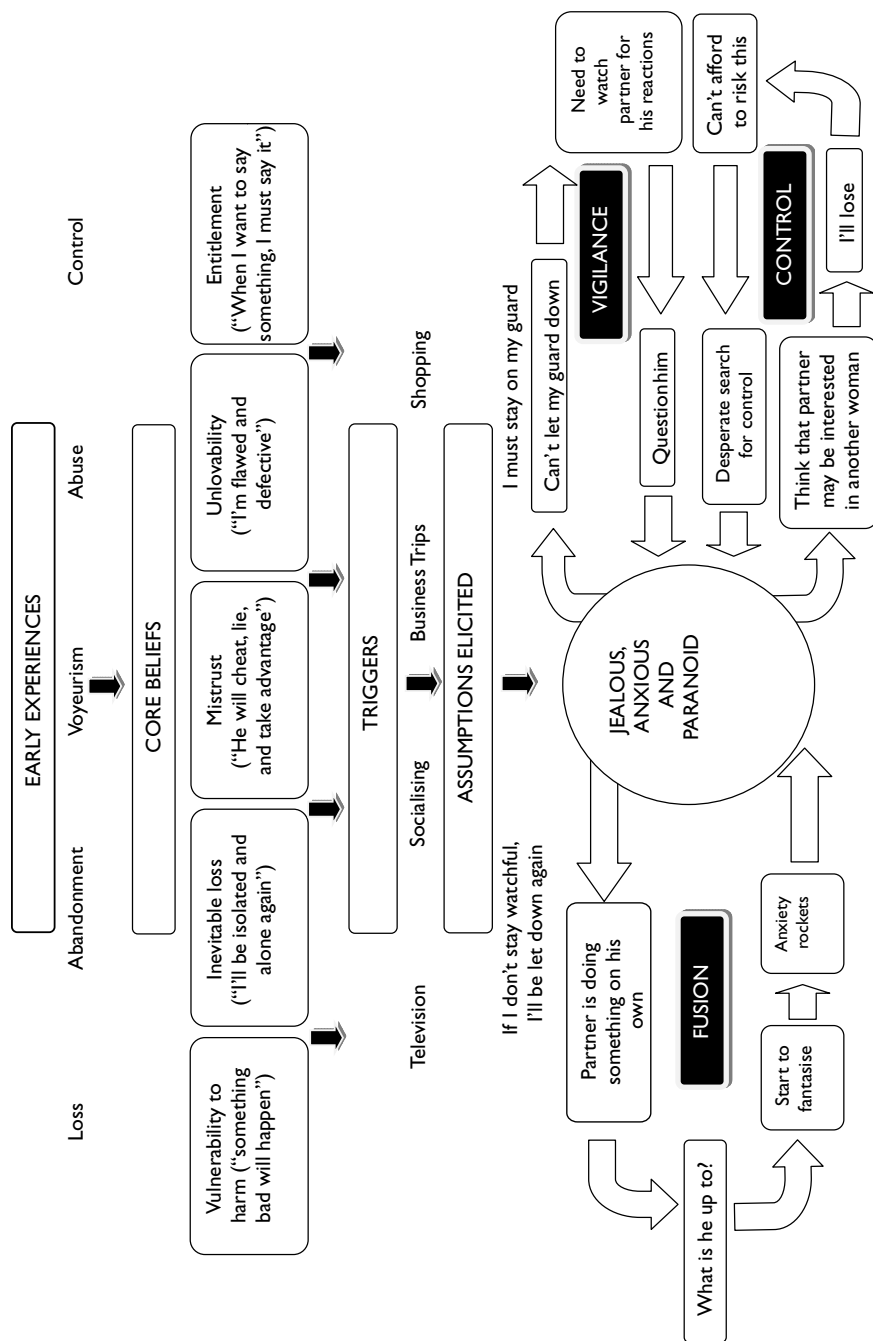


Diagram 2: CBT diagrammatic formulation.

Treatment in the CBT case was initially supported through the use of thought records to increase self-awareness in which the patient was encouraged to record the situation, negative automatic thought, which schema was being activated, and the degree of emotional distress. This progressed later in treatment to use of an additional column in which challenges to the thoughts and beliefs were made and additional ratings of emotion made. The five schema apparent from the formulation were treated using two methods: behavioural experiments and continua methods (James & Barton, 2004). Frequent behavioural experiments were used to attempt to soften core beliefs, for example, the entitlement schema was tested out and partly corrected by a piece of homework in which the patient tested out what it would be like not to immediately voice a jealous concern. Treatment sessions made use of horseshoe continuum methods (Elliott & Kirby Lassen, 1998) for schema, by which the patient was able to appreciate that the most functional area was in the mid-section of the continuum and that movement on the continuum was possible according to context. Exposure and response prevention methods were employed for the fusion (e.g., exposure to solitude) and vigilance (e.g., exposure to not watching) maintenance cycles.

There were common aspects of intervention across the CBT and CAT and these were as follows: (1) active use of diagrammatic formulations, (2) between-session homework, (3) linking current jealousies to previous developmental trauma, (4) exposure to previously avoided behaviours, and (5) scaffolding efforts to individuate from the emotionally fused marital relationship.

Results

Patients' general psychological functioning

The outcome measures at assessment, termination, and follow-up are shown in Table 1. The reliability of observed changes was assessed using Jacobson's Reliable Change Index (RCI; Jacobson & Truax, 1991). RCI scores determine whether recorded change in a measure as a result of intervention is greater than the change that would be expected due to measurement error and takes into account the reliability of the measure, based on normative data from clinical samples (Mathhey, 2004). Therefore, the published clinical norms were used for the RCI calculations for the BDI-II (Beck *et al.*, 1995), IIP-32 (Barkham *et al.*, 1994), and BSI (Derogatis, 1993). It was not possible to calculate RCI's for the PJQ and RJQ, due to the lack of necessary psychometric information/norms.

Table 1. Outcome measures at assessment, termination, and follow-up

	CAT patient			CBT patient		
	Assessment	Termination	Follow-up	Assessment	Termination	Follow-up
BDI-II	26	2	0	28	0	20
IIP-32	2.00	0.56	0.71	2.28	0.72	1.13
BSI-GSI	1.98	0.49	0.18	1.98	0.08	0.92
PJQ	115	57	50	142	76	98
Jealousy triggers scale from the RJQ	225	125	124	250	140	203

The CAT case showed a reliable improvement in depression (BDI-II RCI = 6.93, $p < .05$), interpersonal functioning (IIP-32 RCI = 3.69, $p < .05$), and general mental health (BSI-GSI RCI = 4.50, $p < .05$) between assessment and termination, with no reliable change in these measures between termination and follow-up (i.e., neither further improvement nor relapse). The CBT case showed reliable improvement in depression (BDI-II RCI = 8.09, $p < .05$), interpersonal functioning (IIP-32 RCI = 4.00, $p < .05$), and general mental health (BSI-GSI RCI = 5.93, $p < .05$) between assessment and termination, but a reliable deterioration in depression (BDI RCI = -5.78, $p < .05$) between termination and follow-up (i.e., evidence of mood relapse). The PJQ scores indicate that the CBT case scored in the 'very severe jealousy' range at assessment, which fell to 'moderate' at both termination and follow-up. The CAT case scored in the 'severe jealousy' range at assessment, falling to 'mild jealousy' at both termination and follow-up.

Patients' target jealousy symptoms

Table 2 shows the unadjusted means and SDs of the patient and partner target measure jealousy items during the baseline, therapy, and follow-up phases. The patient data were analysed using a time-series intervention analysis (Box & Tiao, 1975) with the patients' daily self-ratings as the dependent variables. The first stage of this analysis involved identifying the best Autoregressive Integrated Moving Average Model (ARIMA; Box & Jenkins, 1976) for each time-series for each patient prior to the therapeutic

Table 2. Descriptive statistics on the target jealousy symptom items for patients and partners during baseline, therapy, and follow-up phases

Variables	Baseline			Therapy			Follow-up		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
1. Jealousy									
CAT patient	34	3.50	2.23	98	1.68	1.15	84	1.05	0.27
CBT patient	40	3.90	2.23	51	2.75	2.28	84	2.65	1.89
2. Anxiety									
CAT patient	34	3.65	2.19	98	1.87	1.58	84	1.25	1.14
CBT patient	40	4.33	2.34	51	3.51	3.08	84	2.77	1.87
3. Self-esteem									
CAT patient	34	4.32	1.53	98	5.54	1.49	82	5.09	0.32
CBT patient	40	4.38	1.37	51	5.57	2.52	84	6.38	1.86
4. Disinhibition									
CAT patient	34	2.97	1.95	98	1.55	1.05	84	1.06	0.45
CBT patient	40	3.10	2.18	51	2.53	2.15	84	1.79	1.07
5. Hypervigilance									
CAT patient	34	3.32	2.18	98	1.49	0.76	84	1.00	0.00
CBT patient	40	3.60	2.18	51	2.55	1.80	84	2.68	1.95
6. Partner jealousy									
Partner of CAT patient	32	2.16	2.00	98	1.24	0.69	-	-	-
Partner of CBT patient	43	2.05	0.92	51	2.10	0.64	-	-	-
7. Controlled									
Partner of CAT patient	32	1.09	0.39	98	1.04	0.20	-	-	-
Partner of CBT patient	43	2.60	1.07	51	2.20	0.90	-	-	-

Note. All variables used a 1–9 rating scale.

intervention. Inspection of the autocorrelation functions (ACF), partial autocorrelation functions (PACF), and Box-Ljung statistics indicated that a simple ARIMA(1,0,0) model would be suitable in each case. Two-step functions, one for therapy and one for follow-up, were then entered as predictor dummy variables in the ARIMA(1,0,0) models for the entire time-series of each dependent variable. These were used to assess the impact of therapy and the additional impact of follow-up on the time-series of each dependent variable. Analysis of the residual ACF and PACF profiles from each model indicated that there was a satisfactory fit (i.e., no significant values at the various time lags) for the CBT patient jealousy target measure items but not for the CAT patient target measure jealousy items. Using the ACF and PACF profiles, an ARIMA(1,0,2) model was identified as more appropriate for the CAT patient. Re-estimation using this alternative model indicated a satisfactory fit for each of the CAT patient variables, and was therefore used for the CAT patient analysis.

For the CBT patient, the ARIMA models showed no significant effects on patient jealousy for therapy, $T(173) = -1.56$, *ns*, or follow-up, $T(173) = -.22$, *ns*, on hypervigilance for therapy, $T(173) = -1.44$, *ns*, or follow-up, $T(173) = .16$, *ns*, on disinhibition for therapy, $T(173) = -.98$, *ns*, or follow-up, $T(173) = -1.53$, *ns*, on anxiety for therapy, $T(173) = -1.07$, *ns*, or follow-up, $T(173) = -1.25$, *ns*, or on self-esteem for therapy, $T(173) = 1.67$, *ns*, or follow-up, $T(173) = 1.12$, *ns*. The CAT patient showed reduced jealousy during therapy, $T(211) = -2.38$, $p < .05$, and again during follow-up, $T(211) = -2.48$, $p < .05$, reduced hypervigilance during therapy, $T(211) = -8.07$, $p < .01$, and again during follow-up, $T(211) = -2.77$, $p < .01$, reduced anxiety during therapy, $T(211) = -4.36$, $p < .01$, but not during follow-up, $T(211) = -1.27$, *ns*, greater self-esteem during therapy, $T(210) = 4.44$, $p < .01$, but reduced self-esteem during follow-up (from the level during therapy), $T(210) = -2.04$, $p < .05$, and no significant effects on disinhibition for therapy, $T(211) = -1.30$, *ns*, or follow-up, $T(211) = -1.23$, *ns*.

Figure 1 shows the day-by-day changes in each patient's jealousy during baseline, therapy, and follow-up phases. A number of methods have been developed to estimate the size of intervention effects in single-case experimental designs. Comparing three such methods, Manolov, Solanas, and Leiva (2010) concluded that the percentage of treatment data points exceeding the baseline median (PEM; Ma, 2006) is an effective method when autocorrelation or trend is present in the data. PEM was therefore used here. Cohen (1998) divided the evaluation of effect sizes into three parts in which sizes 0.20, 0.50, and 0.80 are labelled as slight, moderate, and strong effects, respectively. For CBT, the effect sizes were .71 for jealousy, .56 for hypervigilance, .53 for disinhibition, .76 for anxiety, and .74 for self-esteem target jealousy symptom items. For CAT, the effect sizes were .91 for jealousy, .80 for hypervigilance, .80 for disinhibition, .89 for anxiety, and .90 for self-esteem target jealousy symptom items. It is worth noting in the CAT data in Figure 2 that jealousy was largely extinguished by the mid-period of the treatment phase (i.e., patient and partner scoring 1 'not at all' consistently on that item).

Partners' target symptoms

In order to examine whether partners perceived any change in the jealousy of the patients, intervention analyses were conducted on the CBT and CAT partner ratings using the same ARIMA model parameters as those used for the patients themselves, because they were established as being the most suitable. However, only a dummy variable for therapy was included in the models, because partner data did not extend to the follow-up period. The partner of the CBT patient felt less controlled following therapy, $T(92) = -2.31$, $p < .05$, but did not report a significant change in patient

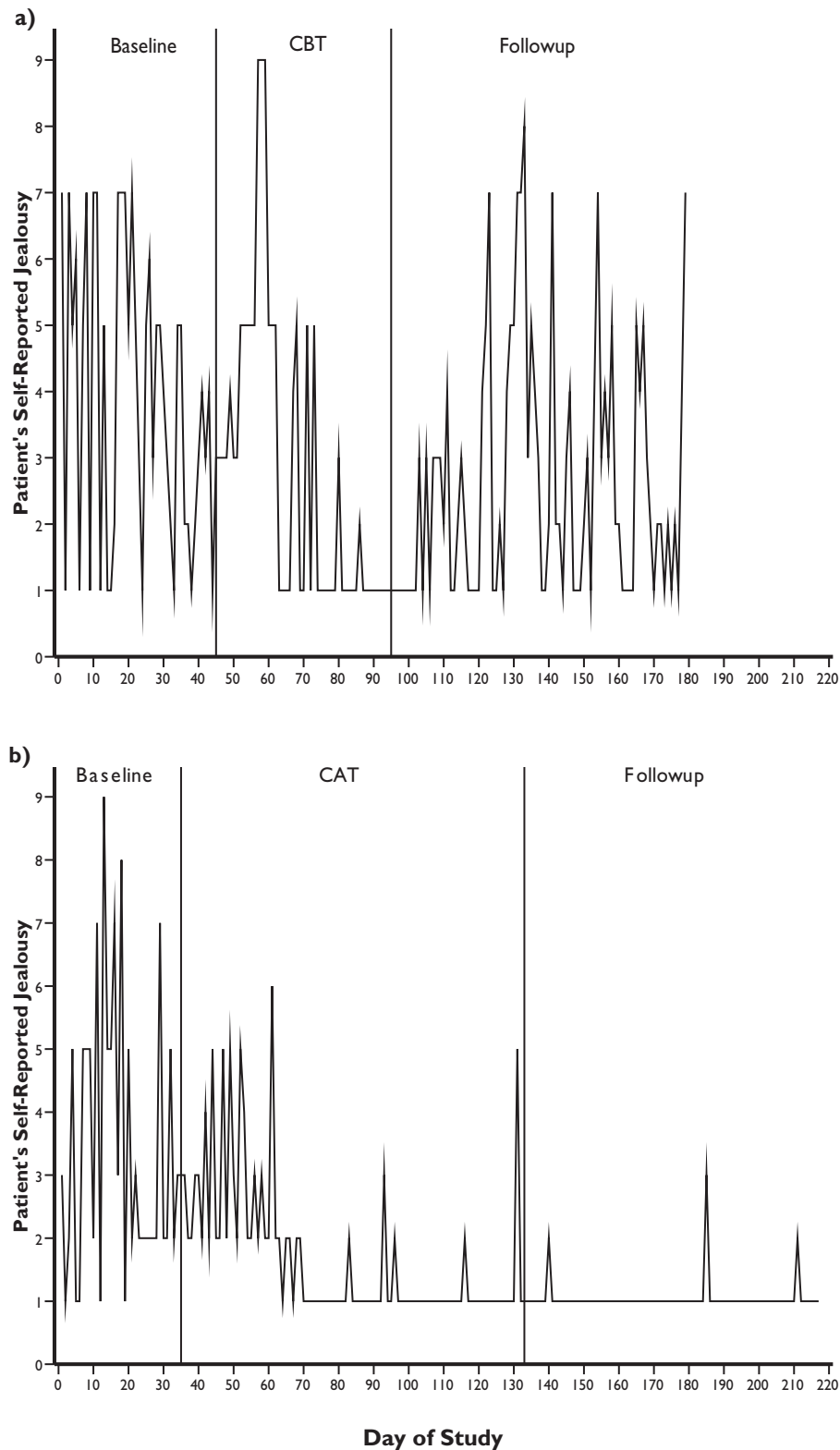


Figure 1. Daily mean jealousy in (a) CBT patient and (b) CAT patient across the study phases.

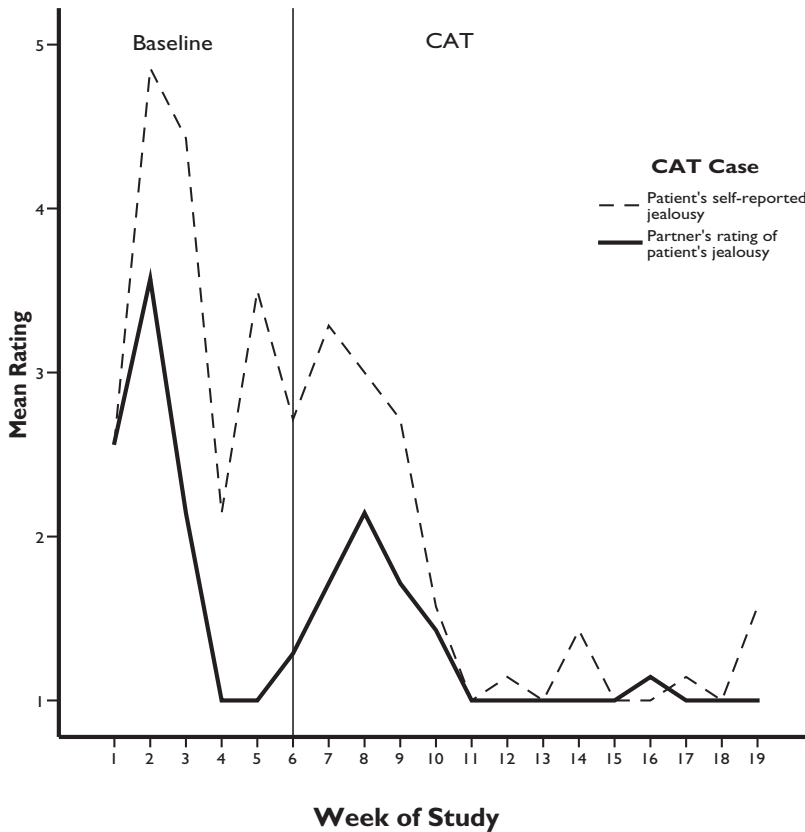


Figure 2. Self-reported and partner-reported patient jealousy for the CAT patient during baseline and treatment.

jealousy, $T(92) = -0.13$, *ns*. The partner of the CAT patient did not report a significant change in either patient jealousy, $T(127) = -0.79$, *ns*, or feeling controlled, $T(127) = -0.90$, *ns*.

To examine how well the partners' reports corresponded to the patients' reports, an autoregression analysis was conducted with the partners' reports of patient jealousy as the dependent variables. The CBT patient's self-reported jealousy was not a significant predictor of the partner's experience of patient jealousy, $\beta = .01$, $T(90) = 0.06$, *ns*, but the CAT patient's self-reported jealousy was a significant predictor of the partner's experience of patient jealousy, $\beta = .48$, $T(129) = 10.35$, $p < .01$. Figure 2 graphs the manner in which self-reported and partner-reported patient jealousy co-varied from week-to-week during baseline and therapy for the CAT patient. The other patient target symptom items (hypervigilance, disinhibition, anxiety, and self-esteem) were then entered with the self-reported jealousy item, to determine the best predictor of partners' reports of patient jealousy. For the CBT patient, the only significant predictor was the patient's low self-esteem, $\beta = -.13$, $T(86) = -2.00$, $p < .05$. For the CAT patient, the only significant predictor was the patient's target measure item of hypervigilance, $\beta = -.25$, $T(125) = 2.22$, $p < .05$. This suggests that the CBT patient's low self-esteem and the CAT patient's watchfulness were the most salient cues (of

those measured) by which partners assessed the ongoing presence of jealousy in the relationship.

To determine whether partners felt more controlled when patients reported feeling more jealous, the autoregression analysis was repeated, but using the partners' reports of feeling controlled as the dependent variables. The CBT patient's self-reported target measure item of jealousy was not a significant predictor of the partner feeling controlled, $\beta = .08$, $T(190) = 1.65$, *ns*, but the CAT patient's self-reported target measure of jealousy was a significant predictor of the partner feeling controlled, $\beta = .05$, $T(129) = 3.74$, $p < .01$.

Discussion

The current study has been the first to attempt to use SCED methods to evaluate the responsivity of patients to CBT and CAT treatments for morbid jealousy, whilst also measuring contemporaneously over time whether partners perceive any change in patients' jealous feelings and behaviours. In terms of the CAT patient, the results indicate significant sequential reductions in jealousy and hypervigilance across the phases of the study. Despite such therapeutic gains being made by the patient, statistical analysis of the partner data illustrated that they did not perceive any change to the patient's jealousy or controlling behaviour. This illustrates a desynchronicity of outcome for the CAT case, when outcomes were measured from different perspectives. In terms of the CBT case, none of the changes to target jealousy symptom items were significant, whilst their partner did report feeling less controlled in the relationship following patient treatment. The effect size calculations suggest large effect sizes (Cohen, 1998) in the CBT case (apart from hypervigilance and disinhibition) and for the CAT case in terms of all the target jealousy symptom items. These effect sizes were attained, despite the Bishay *et al.*, (1989) assertion that change is typically difficult to achieve with morbidly jealous patients. For the CAT case, the graphing of the jealousy item showed that the presence of jealousy had largely extinguished by mid-treatment. It appears for the CBT case that despite the lack of statistical significance of the ARIMA time series analysis of the data, in terms of effect sizes, the CBT was an effective therapy. The findings from the ARIMA analysis may be conservative because the model removes variance that may have been changed by therapy.

The effect size calculations of the target jealousy symptom items were paralleled by improvements in general psychological functioning, as indexed by reliable change in the traditional outcome measures on the pre-post psychometric outcomes for the CAT and CBT cases. It would have been useful to be able to calculate reliable change on the PJQ (Beckett *et al.*, 1992), but efforts were stymied by the lack of relevant psychometric evidence. It is a matter of concern for the morbid jealousy evidence base that there is no agreed or sufficiently developed primary outcome measure of jealousy, for use in clinical trials and practice-based evidence designs. No further progress psychometrically was evident in either case over the follow-up period. Low self-esteem has been postulated to be the key personality factor for the development and maintenance of morbid jealousy (DeSteno *et al.*, 2006). Self-esteem in the CBT case did not change and in the CAT case self-esteem was significantly higher during treatment, but then significantly lower (compared to the treatment phase) during follow-up. The treatment across both cases centred on reducing morbid jealousy, rather than on increasing self-esteem. It would be interesting to compare treatments for low self-esteem (e.g., Hall & Tarrier, 2003)

with morbid jealous patients to more targeted morbid jealousy approaches (e.g., Leary & Tirsch, 2008), such as the therapies delivered in the current study.

In terms of the relative merits of CBT and CAT in the treatment of morbid jealousy, then both modalities appear to have distinct strengths. As there are many behavioural aspects to morbid jealousy (such as the high levels of checking), a therapy that focuses on achieving behavioural change, such as CBT, would seem to be useful and appropriate. Similarly, jealous cognitions are irrational and unhelpful and the patient can be worked with usefully in terms of producing less threat-prone interpretations of their partner's actions (Leary & Tirsch, 2008). Due to its strong emphasis on reformulation of past trauma/neglect and the connectivity to current patterns of interaction (Ryle, 1991, 1995, 2004), CAT offers an opportunity for the jealous patient to recognize and revise the links between their developmental past and current unhelpful reciprocal roles. Whilst it has been stated that 'insight oriented' therapies should not be attempted with morbid jealousy (Manschreck, 2000), CAT appears to offer 'good enough' insight via the reformulation process, before engaging the patient in the process of change. It would be a mistake for any therapy to neglect behavioural change with jealous patients and the 'exits' generated in CAT can be distinctly behavioural in approach, should that be the best way forward (Kellett, *in press*).

The partner reports provided insight into the experience of morbid jealousy from a partner perspective over time and particularly when a significant other is undergoing treatment. In the CBT case, therapy appeared to effectively change perceptions by the partner of the patient's jealous controlling behaviours. This perception of change was absent in the CAT case. The reduction to controlling behaviours perceived by the partner in the CBT case is striking given that the therapy was not delivered in a couples format. The partners of morbidly jealous patients may develop 'coping strategies' over the years in the relationship (Brown, 2004), one of which may be to ignore the jealous behaviour of their partner and this may make partners less sensitive to noticing when change is underway or achieved. Research on the mental health and attachment styles of partners of jealous patients is indicated. The regression analysis illustrated that partners were alert to differing aspects of the patients' jealous behaviours. For the CAT case, the partner rated jealousy as higher in the patient when they felt closely watched by the patient and for the CBT case, the partner rated jealousy as higher when the patient was displaying low self-esteem. This suggests that these factors are interpersonally coupled and that partners were making particular use of certain cues in arriving at the conclusion that the patient was in a jealous state of mind.

The CBT patient showed a reliable deterioration in depression (as measured by the BDI-II) at follow-up and also some reoccurrence of the jealousy in the time-series data during the follow-up phase. The CBT patient emigrated during this period and therefore faced the initial loneliness and isolation of a major relocation. It is possible that this change caused the 'inevitable loss' schema to be activated for the patient, without the support of weekly CBT and in the context of a complex attachment/trauma history and higher intake scores on the jealousy screening measures. This change to the environment of the CBT case is acknowledged as a major study limitation, but also represents the realities of everyday clinical work and generating practice-based evidence (Barkham & Mellor-Clark, 2003). Bringle (1991) noted that situational, relationship, and personality factors combine to produce morbid jealousy and in the CBT case, a major situational upheaval occurred in the follow-up period. This may have distorted the temporal response that would have occurred under more stable environmental conditions. In terms of further study limitations, the sample size obviously limits the generalizability of the results. The CAT patient had a lower PJQ intake score for jealousy

(Beckett *et al.*, 1992) and therefore may have found it easier to respond to treatment and be less jealous over time.

Another study limitation is that the baseline across both patients demonstrated a trend of target jealousy symptom item improvement, which weakens the interpretation of the statistical change in the experimental data, because treatment may have only continued the improvement trend (Barlow *et al.*, 2008). This problem was somewhat offset by using an ARIMA analysis to model trends during baseline. Nevertheless, it is possible that the process of assessment (or the regular self-monitoring involved in the SCED baseline) was experienced as therapeutic or instilled hope of change (Kuyken, 2004). Stable baselines in psychotherapy SCED are notoriously difficult to achieve (Barlow *et al.*, 2008) and ethically both patients had completed the assessment process and could not be realistically delayed in terms of progressing onto the treatment phase. Bloom, Fischer, and Orme (2006) stated that as long as the clinical ingredients of the intervention phase are distinct from the assessment phase, then that is sufficient in psychotherapy SCED. A useful addition to the study would have been the establishment of fidelity to the treatment model across the cases, via use of the Competence in Cognitive Analytic Therapy (CCAT; Bennett & Parry, 2004) in the CAT case and the Cognitive Therapy Scale-Revised (CTS-R; Blackburn *et al.*, 2001) in the CBT case. Without the fidelity to the treatment model evidence, there is still a question mark (despite the therapist being accredited in both psychotherapies) of whether the two treatments did truly differ from each other. Although patients and partners were asked not to fill in the SCED items retrospectively, no check was made on when the diaries were completed and indeed some of the data may have been retrospective.

In conclusion, the results suggest that CAT appeared effective in treating aspects of the patient's jealous repertoire over time, whilst the CBT appeared ineffective in producing change in the target jealousy symptom items over time. However, large effect sizes were produced by both interventions. The collection of partner data over time showed that an individual therapy may at times helpfully affect some aspects of the romantic relationship the patient is involved in. Routinely collecting outcome measures from partners ought to be a crucial step in the development of the morbid jealousy evidence base, because jealousy has such a strong relational theme (DeSteno *et al.*, 2006). Such outcomes from partners and patients need to be treated equivalently, but clinicians will always be drawn to facilitating perceptions of change mostly in the person they are treating. CAT deserves more detailed evaluation efforts in relation to the treatment of morbid jealousy, given the encouragement provided by the current study. Although jealousy clearly remains a clinical challenge, the cognitive therapies continue to provide sufficient promise to stimulate more ambitious outcome methodologies being employed, in the effort to further develop the morbid jealousy evidence base.

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