

PARTICIPANT AUTONOMY IN COGNITIVE BEHAVIORAL GROUP THERAPY: AN INTEGRATION OF SELF-DETERMINATION AND COGNITIVE BEHAVIORAL THEORIES

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Two studies ($N = 109$ anxious and depressed patients; $N = 94$ depressed patients) investigated the role of autonomy as described in self-determination theory as a mechanism of therapeutic change in cognitive behavioral group therapy. Across both studies, results showed that higher need satisfaction for autonomy is related to improved outcomes, and that this relationship is mediated by improvement in cognitions. These findings support the tenets of self-determination theory in that patients who perceived their autonomy needs are satisfied while participating in cognitive behavioral group therapy experienced a greater reduction in negative thinking which was in turn related to more positive therapy outcomes.

The study of process variables in group psychotherapy and their relationship to therapeutic outcomes is an important and developing field of research (Bieling, McCabe, & Antony, 2006; Burlingame, MacKenzie, & Strauss, 2004; Lambert, 2004; Yalom & Leszcz, 2005). In this paper we focus on the role of participant autonomy within group cognitive behavior therapy, and the relationships among au-

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tonomy, cognitive change, and symptom outcomes. Autonomy, as derived from self-determination theory (SDT), has been defined as a desire to “self-organize experience and behavior, and to have activity be concordant with one’s integrated sense of self” (Deci & Ryan, 2000). The extent to which participants in a group feel that their need for autonomy is met is termed *autonomy need satisfaction* and we focus specifically on this construct. Various aspects of autonomy have been examined in clinical research so some care must be taken to define and differentiate among these constructs. For example, much has been written about the achievement/autonomy-oriented personality which acts as a vulnerability for depression (Nietzel & Harris, 1990). Other work has focused on autonomous motivation for treatment (Zuroff et al., 2007). However, both of these aspects of autonomy are conceptualized as relatively stable characteristics of the individual that could appropriately be measured prior to treatment. In contrast, autonomy need satisfaction is a construct drawn from the interaction of the individual within the group context, and therefore only meaningfully measured well into the process of group treatment.

SELF-DETERMINATION THEORY AND PSYCHOTHERAPY

To date, SDT and the concept of autonomy need satisfaction have been applied to varied domains including education, parenting, work, health care, sport, and close relationships (Deci & Ryan, 2008). The therapy setting has been identified by several clinical theorists as a social context that can be harnessed to maximize an individual’s psychological experience of autonomy (Berk, Berk, & Castle, 2004; Foote et al., 1999; Joiner, Sheldon, Williams, & Pettit, 2003; Ryan, 2005; Ryan & Deci, 2008). Therapeutic contexts that provide ongoing supports for autonomy needs are termed autonomy supportive (Ryan, 2005; Ryan & Deci, 2000). In such contexts pressure or coercion are minimized and clients are encouraged to make decisions for themselves and to base their actions on their own reasons and values (Markland, Ryan, Tobin, & Rollnick, 2005; Sheldon, Williams, & Joiner, 2003).

In individual therapy, autonomy support is a function of the interpersonal style of the therapist whereas autonomy support in group therapy emanates from the mode of communication adopted by

both the therapist as well as other members of the group. Creating a therapeutic environment that supports autonomy needs is an especially important task for the therapist. In SDT's health outcomes model (Sheldon et al., 2003; Williams, Gagné, Ryan, & Deci, 2002), the extent to which autonomy needs are satisfied is expected to predict the quality of outcomes that ensue. Although this link has been theorized (Markland et al., 2005; Vansteenkiste & Sheldon, 2006; Vansteenkiste, Soenens, & Vandereycken, 2005), it has never been demonstrated in the context of group psychotherapy. The purpose of the current studies is to examine whether autonomy need satisfaction is linked to positive therapeutic outcomes in group psychotherapy. We also examined the underlying mechanisms that might help account for a relationship between autonomy need satisfaction and positive therapeutic outcomes.

AUTONOMY AND OUTCOMES OF GROUP CBT

How the satisfaction of autonomy needs is related to therapeutic outcomes is an important theoretical question. Indeed, SDT has been criticized (Vallerand, 2000) for not clearly explicating whether autonomy need satisfaction exerts its effects on psychological outcomes directly or indirectly. Joiner and colleagues (2003) have provided valuable conceptual insights about how autonomy may relate to therapeutic change in the context of traditional psychological therapies (i.e., cognitive behavioral therapy, interpersonal psychotherapy, and brief psychodynamic therapy). They argue that an individual's experience of autonomy in therapy may not be sufficient in itself to enact therapeutic change. Instead, they propose that autonomy may facilitate the action of empirically validated psychological treatments. Specifically, the adaptive or functional qualities of autonomy may serve as a "mode" for enhancing the efficacy of therapeutic techniques traditionally understood to be responsible for the changes that occur during the course of treatment. To date, however, this theory has not been tested empirically.

In cognitive-behavioral therapy (CBT), therapists use a variety of techniques to bring about change in clinical symptoms and other therapeutic outcomes such as increased quality of life. Techniques may be specific to CBT (such as helping clients to identify, test, and modify underlying maladaptive cognitions) or common among

many psychotherapeutic approaches (such as establishing a strong therapeutic alliance), and both appear to make important contributions to therapeutic outcomes (Lambert & Barley, 2002; Messer & Wampold, 2002; Oei & Shuttlewood, 1997). However, the relationships between therapeutic factors and outcomes are complex. In some cases, there is little evidence to support the specific factors as the mechanism of change in treatment (Morgenstern & Longabaugh, 2000). Furthermore, change in specific factors may not be unique to the theoretical approach that specifies them—for instance, cognitive change in depression is not unique to cognitive therapies (Oei & Free, 1995). As a result, cognitive behavioral theorists are increasingly looking to common factors and the interplay between common and specific factors in an attempt to better understand the process of therapy. If Joiner and colleagues' (2003) theory is correct, then the value of autonomy need satisfaction in a CBT treatment setting may be to facilitate the action of specific cognitive-behavioral techniques, which in turn promotes greater cognitive change. In other words, autonomy needs satisfaction works as a common therapeutic factor that facilitates the specific therapeutic factor of cognitive change in bringing about symptom improvement.

STUDY 1

Autonomy need satisfaction shows clear potential to be an important construct in the interpersonal context of group psychotherapy. This study describes an investigation of autonomy need satisfaction as a mechanism of therapeutic change in group CBT. On the basis of the theory proposed by Joiner and colleagues (2003), we propose a model in which autonomy need satisfaction indirectly influences therapy outcomes. Greater satisfaction of autonomy needs within therapy is expected to help mobilize patients' resources to engage fully in the specific techniques of CBT, promoting greater cognitive change and more positive therapeutic outcomes.

METHOD

Participants

The sample included 109 participants (65% female) collected across 24 therapy groups conducted over two years (there were 3-9 respon-

dents within each group). The sample had a mean age of 41.67 years ($SD = 12.45$). Fifty-six participants (51%) were referred to the mood disorders treatment program and fifty-three participants (49%) were referred to the anxiety disorders treatment program.¹ Among patients referred to the depression treatment program, 82% had received a diagnosis of a Major Depressive Disorder, 11% received a diagnosis of a Bipolar disorder,² 7% received a diagnosis of Dysthymic Disorder and 6% of participants received a diagnosis of one additional depressive disorder (the diagnostic categories overlapped to some extent). Twenty-nine percent of the sample was diagnosed with a comorbid anxiety disorder, 5% with a psychotic disorder, 2% with a personality disorder, and 1% with a somatoform disorder. Of the patients referred to the anxiety treatment program, 42% received a diagnosis of Generalised Anxiety Disorder, 25% Panic Disorder, 11% Panic Disorder with Agoraphobia, 5% Social Phobia, 1% Post-traumatic Stress Disorder, and 15% received a diagnosis of Anxiety Disorder not otherwise specified. Thirty-two percent of this sample was diagnosed with a comorbid depressive disorder, 5% with a psychotic disorder, and 2% with a personality disorder.

Patient status at the time of recruitment was outpatients 83% and inpatients 17%. Ninety-one participants (84%) were prescribed medication, most commonly antidepressants (61%), anxiolytics/sedatives (65%), and mood stabilizers (15%). Those taking pre-

1. It is clear that findings from efficacy studies using randomized control trial methodology in research settings is not necessarily generalizable to more real-world, clinical contexts such as community health, hospital, or private practice settings (Weisz, Weiss, & Donenberg, 1992). Several reasons for this lack of generalizability have been proposed, including the fact that patients in efficacy studies are usually subject to more rigorous inclusion and exclusion criteria, resulting in highly homogeneous samples (Chambless et al., 1998; Seligman, 1995). Patients in research settings are also more likely to be solicited by the researcher (e.g., by media release or advertisement) rather than clinically- or self-referred. Such recruitment procedures may result in more positive client expectations for therapeutic outcome, greater motivation, and more compliance with treatment protocols (Kendall & Southam-Gerow, 1995; Shadish et al., 1997). As a result of the limited overlap between efficacy trials, and real-world clinical applications of the outcome research, there has been a recent move towards the development and validation of effectiveness studies (which export and validate efficacious treatments from research settings to clinical service settings using realistic, real-world clinical populations; Jónsson & Hougaard, 2009; Stewart & Chambless, 2009). The current Study 1 was devised in this spirit, hence the relatively heterogeneous samples. In Study 2, the studies hone in just on patients being treated for depression.

2. In both Studies 1 and 2, the conclusions drawn from the results are not altered regardless of whether or not the bipolar patients are included in the analyses.

scribed medication were taking an average of 2.3 types of medication. Eighty-four participants (77%) listed their nationality as Australian, 6% English, 2% each were Scottish, Irish, and Belgian, and 11% were of other nationalities. Thirty-one participants (28%) listed their highest level of education as high school, 24% postgraduate university, 20% undergraduate university, 18% certificate and/or diploma courses, and 9% other educational qualifications.

Procedure

Patients' suitability for participation in the study was assessed during a formal interview conducted prior to allocation to the group treatment programs. The inclusion criteria for the study were: a *DSM-IV* (American Psychiatric Association, 1994) diagnosis of a depressive or anxiety disorder (made by the participants' treating psychiatrist); aged 18 years or above; fluency in English; and provision of informed consent to participate. The exclusion criteria were: an anxiety or depressive disorder that occurred secondary to another medical problem; a diagnosis of Mental Retardation or a Pervasive Developmental Disorder; cognitive dysfunction with an organic basis (such as brain injury or stroke); acute risk of suicide (defined as having a current serious intent and the means of acting on it); or a general medical problem that would contraindicate treatment.

A number of psychiatrists referred their patients to the private hospital CBT Unit for two group CBT programs running on alternate months: a mood disorders program and a panic/anxiety disorders program. Patients who were accepted into the anxiety or depression treatment programs and consented to participate in the study were administered a battery of self-report measures. Treatment comprised 8 full-day sessions of group CBT over a 4-week period with sessions including psycho-education and CBT skills commonly taught in cognitive behavioral group therapy (Oei & Dingle, 2008) and delivered in accordance with a treatment protocol that has been evaluated and described in detail elsewhere (Oei & Browne, 2006; Oei & Green, 2008; Oei & Sullivan, 1999). The treatment program includes components described by Beck, Rush, Shaw, and Emery (1979) such as psychoeducation, behavioral activation, homework tasks, and identifying and challenging distorted cognitions.

The treatment was delivered by two clinical psychologists (one male and one female) with postgraduate training in clinical psy-

chology and several years of experience in group CBT facilitation. Autonomy measures were collected at post-treatment (i.e., after session 8). All other measures were collected at intake to the program (i.e., at the beginning of session 1) and at post-treatment (i.e., after session 8).

Measures

Psychological Needs Satisfaction Scale. The autonomy subscale of the psychological needs satisfaction scale (Sheldon & Bettencourt, 2002) was designed to measure the degree to which group members perceive that their autonomy needs are satisfied while participating in a group context. This subscale consists of three items: How free and choiceful do you feel as you participate in this group?; How much do you feel wholehearted (as opposed to feeling controlled or pressured) as you do things in this group?; and To what extent does this group allow you to express your authentic self?

Participants responded to the three-item scale on a 7-point scale ranging from 1 (not at all) to 7 (very much) with higher scores denoting greater satisfaction of autonomy needs within the therapy group ($\alpha = .78$).

Cognitions Checklist (CCL). The CCL (Beck, Brown, Steer, Eidelson, & Riskind, 1987) is a 26-item questionnaire designed to measure the frequency of depression and anxiety-related automatic thoughts on a 5-point likert scale from 0 (never) to 4 (always). The CCL is composed of two subscales: a 12-item subscale of anxious cognitions (CCL-A) and a 14-item depressive cognition subscale (CCL-D). The total score for each subscale is computed by summing items in each respective subscale. Higher scores on the CCL-A indicate a higher frequency of harm or threat cognitions, while higher scores on the CCL-D indicates a higher frequency of loss and failure cognitions. Published means from clinical samples on the CCL-A are around 15 to 18, and on the CCL-D are around 16 to 24 (Steer, Beck, Clark, & Beck, 1994). The scales for both CCL-A and CCL-D were highly reliable (α s for pre- and post-measures ranged between .90 and .94).

Zung Self Rating Depression Scale (ZSDS). The 20-item ZSDS (Zung, 1965) was administered as a self-report measure of the severity of current behavioral, cognitive, somatic, and affective symptoms of depression. The sum of the 20 items, after correcting for the 10 items that are reverse-scored, produces a possible raw score of 20 to 80

points. The raw score is then converted into an index score by dividing the raw score by the maximum possible score of 80. A higher score is indicative of a more severe level of depression. Internal consistency of the scale at both pre- ($\alpha = .88$) and post-testing ($\alpha = .91$) were high.

Beck Anxiety Inventory (BAI-1). The BAI-1 (Beck, Epstein, Brown, & Steer, 1988) is a 21-item self-report instrument designed to measure the severity of clinical anxiety. Items are summed to obtain a total score ranging from 0 to 63. A higher score is indicative of a more severe anxiety. Internal consistency of the scale at both pre- ($\alpha = .94$) and post-testing ($\alpha = .95$) were high.

Quality of Life Inventory (QOLI). The QOLI (Frisch, 1994) assesses quality of life across 16 domains. Each item is rated in terms of its importance to the respondent's overall happiness (0 = not at all important, 1 = important, 2 = very important) and the extent to which the respondent is satisfied (-3 = very dissatisfied to 3 = very satisfied). The importance and satisfaction ratings for each item are multiplied to compute weighted satisfaction ratings ranging from -6 to 6, with negative values representing dissatisfaction and positive values representing satisfaction. The overall life satisfaction, or QOLI score, is obtained by averaging all weighted satisfaction ratings that have nonzero importance ratings. Internal consistency of the scale at both pre- ($\alpha = .88$) and post-testing ($\alpha = .87$) were high.

RESULTS

ANALYTIC STRATEGY

In order to establish the extent of interdependence between individual-level outcomes and differences between therapy groups, intraclass correlations were computed. The intraclass correlations ranged from $p = .00$ for the change in self-reported anxiety outcomes to $p = .15$ for the change in anxious cognitions, indicating that between 0.05% and 15% of the variability in outcomes was associated with differences between therapy groups (Tabachnick & Fidell, 2007). This suggested that the data were interdependent. As even small values of p can inflate Type 1 error rate (Barcikowski, 1981), we partialled out the variance caused by both group-level and individual-level factors using hierarchical linear modelling (HLM) analyses in HLM for Windows 6.03 (Raudenbush & Bryk, 2002; Snijders &

Bosker, 1999)—see Kelly, Zuroff, Leybman, Martin, and Koestner (2008) for a relevant discussion.

First, to evaluate whether symptoms and automatic thoughts changed significantly from pre- to post-treatment, a series of repeated-measures multilevel models was conducted. If analyses revealed significant pre- to post-treatment change, residualized change scores were computed. Change scores are designated by the prefix *rc*, with higher (positive) scores indicating greater improvement.

Next, multilevel models examined the behavior of the level 1 outcome (change in self-reported depression symptoms; change in self-reported anxiety symptoms; change in quality of life) as a function of level 1 predictors (satisfaction of autonomy needs as the predictor variables; change in anxious and depressive cognitions as mediators), controlling for the level 2 variance (differences between therapy groups). In these models, γ represents the regression coefficients at the group level (similar to coefficients at the individual level). In the results section, standardized γ , *t* and *p* values are reported as a direct test of the relationships between the outcome and predictor variables. Within-unit R^2 was calculated as recommended by (Kreft & De Leeuw, 1998). This provided the percentage of the variance in change in the individual outcomes that was explained by the individual-level predictor variables. In order to assess the degree to which the models fit the data, we calculated change in χ^2 using deviance values. We used the multilevel first-order Taylor series approximation to estimate the standard error of the mediated effect as is recommended for multilevel mediation with a Level-2 predictor, Level-1 mediator, and Level-1 outcome (Krull & MacKinnon, 1999).

CHANGES IN SYMPTOMS AND COGNITIONS FROM PRE- TO POST-TREATMENT

Repeated measures HLM revealed statistically significant effects of time on all measures of symptoms and cognition (all *ps* < .001). Inspection of the pre- and post-treatment means (Table 1) indicated that participants experienced higher quality of life, fewer symptoms of anxiety and depression, and less frequent anxious and depressed automatic thoughts at post-treatment. Significant changes from pre- to post-treatment allow residualized change scores to represent statistically significant variation across the two assessment points.

TABLE 1. Means and Standard Deviations for Pre-Treatment and Post-Treatment Scores on Symptoms and Cognitions

Measure	Pre-Treatment		Post-Treatment	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
CCL-A	17.58	10.33	14.15	9.81
CCL-D	24.84	12.47	20	13.71
Zung-SDS	50.92	11.36	45.71	11.68
BAI-1	19.71	12.91	16.22	12.79
QOLI	0.23	1.86	0.74	1.7

Notes. CCL-A = Cognitions Checklist—Anxiety; CCL-D = Cognitions Checklist—Depression; Zung-SDS = Zung Self Rating Depression Scale; BAI-1 = Beck Anxiety Inventory; QOLI = Quality of Life Inventory.

PREDICTING CHANGE IN ANXIOUS AND DEPRESSIVE THOUGHTS

In the first model, autonomy was entered at level one, with change in anxious cognitions (*rcCCLA*) as the outcome variable. Group-level variance was controlled at level two. Inclusion of autonomy increased variance explained relative to the null model, $\Delta R^2 = .06$, $\Delta\chi^2(1) = 9.58$, $p = .01$. Autonomy had a significant main effect on change in anxious cognitions, $\gamma = 1.49$, $t(99) = 2.70$, $p = .01$, such that anxious cognitions decreased the more participants felt their autonomy needs were met. In the next model, autonomy also significantly predicted change in depressive cognitions (*rcCCLD*), $\gamma = 2.15$, $t(99) = 2.74$, $p < .01$, and significantly increased variance explained relative to the null model $\Delta R^2 = .06$, $\Delta\chi^2(1) = 10.51$, $p < .001$.

MEDIATIONAL ANALYSES

Predicting Change in Depressive Symptoms

Results of the multilevel modeling analyses for the indirect models are summarized in Table 2. In the first model, autonomy was entered at level one, with self-reported depression outcomes (*rcZung-SDS*) as the outcome variable. Group-level variance was controlled at level two. Inclusion of autonomy increased variance explained relative to the null model. Autonomy had a significant main effect

TABLE 2. Multilevel Modeling Analyses for Residualized Change in Negative Automatic Thoughts and Autonomy Predicting Therapy Outcomes

Variable	γ	SE	<i>t</i>	<i>p</i>	ΔR^2	$\Delta\chi^2$
Predicting <i>rc</i>Zung-SDS						
Model 1					.02	4.42*
AutonomyNS	1.80	0.80	2.25	.027		
Model 2					.19	22.38**
AutonomyNS	0.84	0.74	1.14	.258		
CCL-D	0.46	0.09	5.14	.001		
Predicting <i>rc</i>BAI-1						
Model 1					.06	10.22**
AutonomyNS	1.96	0.72	2.72	.008		
Model 2					.12	1.73
AutonomyNS	1.32	0.70	1.90	.061		
CCL-A	0.42	0.12	3.70	.001		
Predicting <i>rc</i>QOLI						
Model 1					.14	12.85**
AutonomyNS	0.33	0.09	3.89	.001		
Model 2					.10	2.40
AutonomyNS	0.25	0.09	2.97	.004		
CCL-D	0.04	0.01	2.84	.006		
CCL-A	-0.00	0.02	-0.03	.976		

Notes. *rc* prefix denotes residualized change scores. AutonomyNS = Autonomy Need Satisfaction Subscale; CCL-A = Cognitions Checklist—Anxiety; CCL-D = Cognitions Checklist—Depression; Zung-SDS = Zung Self Rating Depression Scale; BAI-1 = Beck Anxiety Inventory; QOLI = Quality of Life Inventory. * $p < .05$; ** $p < .01$.

on depression outcomes such that depression symptoms decreased the more participants felt their autonomy needs were met. When change in depressive cognitions (*rc*CCL-D) was included in this model as a mediator, it significantly predicted depression, such that decreased depressive cognitions were associated with decreased depression symptoms. Upon inclusion of the mediator in the model, the autonomy-depression path attenuated and became nonsignificant. The Sobel test confirmed that a reduction in depressed automatic thoughts significantly mediated the relationship between autonomy and pre- to post-treatment improvements in depressive symptoms ($z = 2.42, p = .02$).

Predicting Change in Anxious Symptoms

With anxiety outcomes (*rcBAI-1*) as the criterion, autonomy was found to be a significant predictor, such that anxiety symptoms decreased the more participants felt their autonomy needs were met. Inclusion of autonomy increased variance explained relative to the null model. When *rcCCL-A* was entered in the model as a mediator it significantly predicted anxiety, such that decreased anxious cognitions were associated with decreased anxiety symptoms. Upon inclusion of the mediator, the gamma coefficient for autonomy was no longer statistically significant. A Sobel test ($z = 2.18; p = .03$) confirmed the relationship between autonomy and change in anxious symptoms was significantly mediated by a reduction in anxious automatic thoughts.

Predicting Change in Quality of Life

This same pattern held in the final multilevel model with quality of life (*rcQOLI*) as the criterion. Autonomy had a significant main effect (quality of life increased the more participants felt their autonomy needs were met) and significantly increased the variance explained relative to the null model. Both *rcCCL-A* and *rcCCL-D* correlated significantly with quality of life, therefore the measures were entered into the model together as mediators. *rcCCL-A* did not have a significant effect on the dependent variable. In contrast, *rcCCL-D* did have a significant main effect on quality of life (decreased depressive cognitions associated with higher quality of life) and a drop in the gamma coefficient was observed for autonomy. The Sobel test confirmed this represented a significant mediation effect ($z = 2.13, p = .03$). However, unlike results observed for depression and anxiety, autonomy remained a significant predictor of quality of life. In other words, there was evidence for partial rather than full mediation of this relationship by the cognitive change.

DISCUSSION

This study describes the first empirical test of the theorized relationship between autonomy need satisfaction and outcomes from group CBT for adults with mood and anxiety disorders. Results provided

support for the hypothesized model, with cognitive change processes mediating the relationship between autonomy and therapy outcomes. Hierarchical regression analyses indicated that satisfaction of autonomy needs significantly predicted outcome when considered alone.³ As expected, though, the effects of autonomy were significantly attenuated when changes in negative automatic thoughts were accounted for. Change in negative automatic thoughts fully mediated the effects of autonomy need satisfaction on depression, anxiety, and client-rated improvement and partially mediated the relationship between autonomy and quality of life. These findings suggest that autonomy need satisfaction exerts its therapeutic effects in cognitive behavioral group therapy by facilitating cognitive change. Individuals who perceive their autonomy needs are satisfied while participating in therapy experience a greater reduction in negative automatic thoughts which in turn promotes more positive therapy outcomes. The finding that mediation was partial in relation to quality of life outcomes may have been due to the fact that this is a broader measure of functioning across a variety of domains (many of which take longer than the duration of the treatment), whereas the other outcome measures (symptoms and participant rated change) are targeted directly in the treatment.

A shortcoming of this study is that autonomy was only measured at post-treatment, and the key cognitive and symptom variables were measured at pre- and post-treatment. Although it is appropriate to measure autonomy need satisfaction well into the course of treatment when the participants have experienced the group context, the fact that it was measured only at post-treatment (at the same time that depression outcome was measured) means that we cannot demonstrate direction in the relationship between autonomy and outcomes from group therapy. A second study was designed to address this issue with a second sample of 94 depressed patients recruited from the hospital CBT unit previously described. The proposed predictor variable (autonomy need satisfaction) and mediator variable (depressive cognitions) were measured at pre-, mid-, and post-treatment, while the outcome variable (depressive

3. It should be noted that we also measured group cohesion at post-treatment using the 9-item cohesion subscale of the Group Environment Scale (Moos, 1986). Cohesion correlated significantly with autonomy need satisfaction ($r = .37, p < .001$) but did not correlate significantly with any of the outcome measures (r s range from .05 - .11, all p s $> .30$). Furthermore, all the effects below remain even if cohesion is controlled for. It is clear that the effects of autonomy need support are independent of group cohesion.

symptoms) was assessed at pre- and post-treatment. The aims and hypotheses were the same in this study as in Study 1.

STUDY 2

METHOD

Participants

The sample included 94 participants (50% female) collected across 21 therapy groups conducted over 2 years (there were 3-8 respondents within each group). The sample had a mean age of 45.98 years ($SD = 14.13$). Seventy-nine participants (84%) listed their nationality as Australian. Over half of the participants (54%) were married or in de facto relationships, 27% were single, 16% separated or divorced, 2% engaged, and 1% widowed. Overall, 37% listed their highest level of education as secondary school, 18% postgraduate university, 22% undergraduate university, 15% certificate and/or diploma courses, and 8% other educational qualifications. At the time of recruitment, 86% were outpatients and 14% were inpatients. All participants were referred for treatment of their mood disorder and were prescribed antidepressant medication. Of the 84 participants with diagnostic information available, the most common diagnoses were: Major Depressive Disorder—episode or recurrent (75%); Dysthymic Disorder (14%); and Bipolar Disorder (5%) (note there was some overlap among diagnostic categories). Comorbid diagnoses were common, with 51% diagnosed with an anxiety disorder, 12% with a substance use disorder, and 5% with a personality disorder. Psychiatric diagnoses were made by the patients' treating psychiatrists according to DSM-IV clinical diagnostic interview, which is normal practice in the hospital system. For privately insured patients to receive treatment at this private hospital CBT unit, they must be formally diagnosed and referred by their specialist psychiatrist—so the 10% of participants with missing data for psychiatric diagnosis did meet criteria for a diagnosis of mood disorder however the exact diagnosis was not recorded in their medical chart for the researchers to gather.

Medication information was available for 80 participants, and all but one of these was on medication (99%). Fourteen participants had missing information about medication and one participant was changing medication during the course of the group CBT. Of the

participants with medication information available, 94% were prescribed antidepressants, 43% antipsychotics, 35% anxiolytics/sedatives, 10% mood stabilizers, and 3% addiction medications. The average number of medications prescribed per individual was two.

Measures

The same items were used to measure autonomy need satisfaction and CCL-D as were used in Study 1. The internal consistencies for these scales were high regardless of whether measurements were taken at pre, mid, or post-treatment (autonomy need satisfaction α ranged from .81 to .88; CCL-D α ranged from .90 to .94). Because Study 2 used a depressed sample, the anxious cognitions subscale of the CCL was not used. To measure depression symptoms, we used the Beck Depression Inventory (BDI). The 21-item BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is one of the most widely used instruments for measuring the severity of depression. It is a self-report measure of the severity of cognitive, somatic, and affective symptoms of depression over the past week. Each item is scored on a scale ranging from 0 to 3, with higher scores indicating greater severity. Items are summed to give a total score from 0 to 63, which is then compared to the following cut-offs for interpretation: 0–9 indicates that a person is not depressed, 10–18 indicates mild-moderate depression, 19–29 indicates moderate-severe depression, and 30–63 indicates severe depression. Higher total scores indicate more severe depressive symptoms. Internal consistencies of the scale were high at both pre- ($\alpha = .90$) and post-treatment ($\alpha = .91$).

Procedure

The same procedure of recruitment and screening for exclusion and inclusion criteria was followed in the second study. Diagnostic information was collected by means of a chart audit of admitting psychiatrists' notes, and using the ICD-10 codes. The treatment was the same as described in Study 1. Autonomy and CCL-D measures were collected at intake to the program (i.e., at the beginning of session 1), at mid-treatment (i.e., after session 4) and at post-treatment (i.e., after session 8). BDI measures were taken just at pre- and post-treatment.

TABLE 3. Means and Standard Deviations for Autonomy, Depressive Cognitions and Depression Symptoms at Pre-Treatment, Mid-Treatment and Post-Treatment

Measure	Pre-Treatment		Mid-Treatment		Post-Treatment	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
AutonomyNS	5.17	1.09	5.58	0.90	5.49	1.12
CCL-D	25.57	10.79	23.38	12.11	19.58	12.47
BDI	22.62	10.47			17.06	10.30

AutonomyNS = Autonomy Need Satisfaction Subscale; CCL-D = Cognitions Checklist—Depression; BDI = Beck Depression Inventory.

RESULTS AND DISCUSSION

As presented in Table 3, the individual-level mean values on autonomy need satisfaction were quite high across treatment (averaging over 5 out of 7 on the rating scale). Most of the increase in autonomy occurred from pre-treatment to mid-treatment, with a slight further increase in the second half of the treatment process. Depressive cognitions decreased across the three treatment time-points as expected, and depressive symptoms decreased from an average in the moderate to severe range at pre-treatment, to an average in the mild to moderate range at post-treatment, indicating that overall the group CBT was effective. Repeated measures HLM revealed statistically significant effects of time on all measures of symptoms and cognition (all $ps < .05$).

Results of the multilevel modeling analyses are summarized in Table 4. The first model used raw scores of autonomy need satisfaction (mid-treatment) to predict depression outcomes at post-treatment (note that it does not make sense to use autonomy need satisfaction pre-treatment scores because group processes have not yet had a chance to develop). Autonomy need satisfaction was significantly associated with lower depression symptoms, but when CCL-D (mid-treatment) was added to the model, the autonomy-depression path attenuated and became nonsignificant. The Sobel test confirmed that a reduction in depressed automatic thoughts significantly mediated the relationship between autonomy and post-treatment depressive symptoms ($z = -2.37$; $p = .02$).

A second model examined the same set of relationships, but this time using residualized change scores. In the initial model, change in autonomy need satisfaction from pre- to mid-treatment significant-

TABLE 4. Results of Multilevel Modeling Analyses to Test a Raw Score Mediated Model, and a Mediated Model using Residualized Change Scores

Variable	γ	SE	<i>t</i>	<i>p</i>	ΔR^2	$\Delta\chi^2$
Predicting BDI-post						
Model 1					0.12	26.28**
AutonomyNS(mid)	-3.63	1.38	-2.62	0.012		
Model 2					0.18	22.38**
AutonomyNS(mid)	-1.84	1.4	-1.32	0.194		
CCL-D(mid)	0.41	0.11	3.86	0.001		
Predicting rcBDI pre to post						
Model 1					0.08	4.58*
rcAutonomyNS (pre to mid)	0.25	0.13	2	0.05		
Model 2					0.41	34.56**
rcAutonomyNS	-0.01	0.1	-0.07	0.944		
rcCCL-D (pre to post)	0.83	0.13	6.44	0.001		

Notes. *rc* prefix denotes residualized change scores. AutonomyNS = Autonomy Need Satisfaction Subscale; CCL-D = Cognitions Checklist—Depression; BDI = Beck Depression Inventory. * $p < .05$, ** $p < .001$

ly predicted depression symptom (BDI) change across the course of treatment. This relationship became nonsignificant after change in depressive cognitions from pre- to post-treatment was added to the model. A Sobel test of this mediation model ($z = 2.37$, $p = .02$) was significant and provided further support for the notion that a link between autonomy need satisfaction and outcome is mediated by change in depressive cognitions.

GENERAL DISCUSSION

These two studies were designed to investigate the role of autonomy need satisfaction as a potential mechanism of therapeutic change in cognitive behavioral group therapy for adults with mood and anxiety disorders. The results of both studies demonstrated that participants with higher autonomy need satisfaction had better treatment outcomes. Many people find the prospect of entering group therapy daunting, as they face the prospect of sharing their personal experiences and feelings with not only a therapist but also a number of strangers. This prospect makes many people feel vulnerable and may cause some to behave in a cautious or inhibited

manner within the group. The results of these studies suggest that the participants who felt able to express themselves authentically within the group context did better in terms of symptom reduction by the end of treatment. To our knowledge, this is the first time that the link between autonomy need satisfaction and clinical outcomes has been demonstrated in the context of group psychotherapy.

Furthermore, the meditational analyses are consistent with Joiner and colleagues' (2003) suggestion that the primary role of autonomy is to help create conditions under which individuals are ready and able to benefit from therapy rather than directly enacting or eliciting change itself. In the case of CBT, specific techniques were utilized to bring about cognitive change, and group participants with higher autonomy need satisfaction were more able to benefit from these techniques as shown in their increased cognitive change and symptom improvement by the end of treatment.

This paper is the first to test empirically (a) whether there is a relationship between autonomy need satisfaction and clinical outcomes in group psychotherapy; and (b) *why* autonomy need satisfaction might relate to outcomes in group psychotherapy. However we acknowledge that—as a first empirical test of an integrated model—this analysis may not reflect the full complexity of the relationship between autonomy need satisfaction and cognitive change. For example, it could be that other variables may help articulate the relationship between autonomy need satisfaction and our presumed mediator (cognitive change). Our hope is that these studies will be an important precursor to testing more elaborate models down the track.

This caveat notwithstanding, we believe these results have important implications for improving the therapeutic value or efficacy of specific cognitive-behavioral techniques. Our findings suggest that efforts to deliver the specific techniques of CBT in such a way as to maximize group members' experience of autonomy may yield substantial benefits. Therapists can support individuals' autonomy needs by simply: (a) taking the client's perspective, (b) offering the client choices, and (c) providing a meaningful rationale when choice is not possible (Sheldon et al., 2003). When the specific techniques of CBT are delivered in an atmosphere of autonomy support, individuals may be more likely to experience a sense of ownership and self-endorsement with respect to their use of these strategies. This is because the decision to adopt or not to adopt these strategies ema-

nates from the individuals' own choices rather than being coerced by the therapist or fellow group members.

Autonomy can be readily integrated into clinical practice because its satisfaction is not so much dependent on what is implemented in therapy (i.e., the actual techniques or strategies within the therapy itself) but rather how the therapy is delivered. Despite this, theoretical integration of self-determination principles into contemporary psychological therapies has been slow and the few studies published to date have been largely of a theoretical rather than empirical nature (Markland et al., 2005; Vansteenkiste & Sheldon, 2006; Vansteenkiste et al., 2005; Zuroff et al., 2007). Better integration of self-determination theory and other psychological perspectives will help provide guidance to therapists about how to deliver the specific techniques of particular therapies in a way that maximizes autonomy needs.

The current studies have implications for the broader debate about the role of specific and common factors in psychotherapy. Research into specific and common psychotherapeutic factors has moved recently from an almost exclusive focus on individual therapy to the group therapy context, with several researchers suggesting elements of the group process that may prove useful in understanding how group psychotherapy produces its effects (Burlingame et al., 2004; Oei & Browne, 2006). The most widely discussed aspect of group therapy process has been group cohesion, described as the "bedrock of the group experience" (Butler & Fuhrman, 1983). Yalom and Leszcz (2005) regard group cohesion as not only the primary therapeutic factor in group therapy but a "precondition for other therapeutic factors to function" (p. 55). However, it has been argued that cohesiveness has proven to be inadequate as a measurable construct for theory and research and should be replaced with more cogent and specific alternatives (Hornsey, Dwyer, & Oei, 2007; Hornsey, Dwyer, Oei, & Dingle, 2009). This paper develops this argument with an empirical study of the role of autonomy need satisfaction within the group CBT context.

In sum, although there are emerging calls for the integration of humanistic constructs from SDT into contemporary, empirically validated therapies (e.g., Joiner et al., 2003), there is little empirical research on their value or mode of action. The two studies found that the effects of autonomy need satisfaction on outcomes were mediated via a reduction in negative automatic thoughts. These

findings suggest that the primary role of autonomy in group CBT is to facilitate the action of cognitive change.

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