Evaluation of the Internal Consistency, Factor Structure, and Validity of the Depression Change Expectancy Scale

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Abstract:

The psychometric properties and predictive validity of the Depression Change Expectancy Scale (DCES), a modification of an expectancy scale originally developed for patients with anxiety disorders, were examined in two studies. In Study 1, the 20-item scale was administered along with a battery of questionnaires to a sample of 416 dysphoric undergraduate students and demonstrated good internal consistency. A two-factor solution most parsimoniously accounted for the variance, with one factor containing all pessimistically worded items (DCES-P) and the second containing all optimistically worded items (DCES-O). The DCES-P showed patterns of correlations with other measures of related constructs consistent with hypothesized relationships; the DCES-O showed similar, but weaker, relationships with the other measures. Multilevel modeling was used to examine the predictive utility of the DCES in a clinical sample of 63 adults (Study 2). Improved depressive symptoms (over 6 weeks) were strongly associated with optimistic expectancies but were unrelated to pessimistic expectancies for change. The DCES appears to be a promising measure of expectancies for improvement among individuals with depressive symptoms.

Keywords: Depression Change Expectancy Scale | expectancies | measurement | test validation | treatment outcome

Article:

Patients' expectations for change in psychotherapy (sometimes referred to as outcome expectancies) have been regarded as an important but neglected variable in the psychotherapy literature (Greenberg, Constantino, & Bruce, 2006; Weinberger & Eig, 1999). Numerous studies involving a variety of psychological disorders have suggested that more optimistic patient expectancies at pretreatment are associated with greater improvement over the course of

psychological interventions (Chambless, Tran, & Glass, 1997; Dew & Bickman, 2005; Price, Anderson, Henrich, & Rothbaum, 2008; Safren, Heimberg, & Juster, 1997; Wenzel, Jeglic, Levy-Mack, Beck, & Brown, 2008; Westra, Arkowitz, & Dozois, 2009) and with response to pharmacotherapy (Howland, 2008), although contradictory findings have been reported (e.g., McFarlane, Olmstead, & Goldbloom, 2005). Pretreatment expectancies also have been shown to predict the quality of the therapeutic alliance (Connolly Gibbons et al., 2003; Meyer et al., 2002), and alliance, in turn, has been proposed as a mediator of the expectancy–outcome relationship (Joyce, Ogrodniczuk, Piper, & McCallum, 2003). A similar relationship has been observed among expectancy for change, homework completion, and treatment outcome (e.g., Westra et al., 2009).

One important mechanism of change common to many forms of psychotherapy is the activation of positive expectancies for improvement (Goldstein, 1960). Unlike many pretreatment variables that are associated with response to treatment (such as age, gender, or comorbidity) that cannot be altered, evidence suggests that expectancies are amenable to change. For example, Ahmed and Westra (2009) found an increase in positive expectancies for change among students with high social anxiety following exposure to a psychoeducational videotape that emphasized the effectiveness of treatment for reducing anxiety. Experimental manipulation of expectancies has been shown to affect symptom improvement (Ingram & Goldstein, 1978). Thus, improving our understanding of the nature and function of expectancies may have important implications for enhancing treatment outcome across a range of treatment modalities.

Core cognitive features of depression include hopelessness, negative beliefs about oneself and the future, and an external locus of control (Beck, 1967; Beck, Weissman, Lester, & Trexler, 1974; Presson & Benassi, 1996). As such, depressed clients may present for therapy with pessimistic expectations for change. These negative expectations, combined with the motivational deficits that characterize depression, may set the stage for premature treatment termination, a major problem particularly in community-based mental health settings (e.g., Merrill, Tolbert, & Wade, 2003). The extent to which expectancies for change are related to variability in treatment trajectories and are subject to manipulation are important empirical questions that have been understudied in the depression treatment literature.

A major limitation of the research on expectancies for change is the lack of measurement instruments with demonstrated psychometric properties (Greenberg et al., 2006). Several studies have relied on a single item, sometimes included as part of some other measure, to assess expectancies (Connolly Gibbons et al., 2003; Meyer et al., 2002). However, more sophisticated expectancy measures have been developed. For example, Dozois and Westra (2005) developed the Anxiety Change Expectancy Scale (ACES), a 20-item measure of expectancies for change for use in patients with anxiety disorders. These researchers reported good internal consistency and validity of the ACES in both clinical and nonclinical samples (Dozois & Westra, 2005), and found that higher scores on this measure (indicating more optimistic expectancies for change)

predicted a more rapid response to cognitive behavioral therapy (CBT) among patients with an anxiety disorder (Westra, Dozois, & Marcus, 2007).

The primary goal of the present study was to examine the reliability, validity, and factor structure of the Depression Change Expectancy Scale (DCES), which is a modified version of Dozois and Westra's (2005) ACES, in two samples. The first sample was composed of a large number of young adults experiencing at least some depressive symptoms; the second was a clinical sample of adults presenting for outpatient treatment of depression and/or anxiety. The development of the ACES scale involved a literature review of the item content from the empirical literature on predictors of treatment outcome in the areas of anxiety and depression. The rationale was that depression and anxiety are highly comorbid conditions and share many risk factors (see, Dozois, Dobson, & Westra, 2004), and therefore many of the core concepts covered in the scale would apply to both disorders.

Given that the ACES was originally developed for use with anxiety disorder patients, all the items were worded in terms of anxiety symptoms and anxiety-related problems, and the scale lacked adequate coverage of all content areas that are relevant for patients with depression. Specifically, the scale did not include items assessing expectancies regarding the efficacy of behavioral activation strategies and engagement in pleasurable activities. Given that motivational deficits and anhedonia are core features of clinical depression and that behavioral activation is a key intervention strategy associated with expected symptom improvement (Davidson, 1998; Dimidjian et al., 2008; Jacobson et al., 1996), two items that focused on these content areas were added to increase content validity. Two items from the ACES that were not applicable to depression (e.g., exposure-related content) were removed. In addition, items were reworded to focus expectancies regarding mood control and depression. Edwards, Tinning, Brown, Boardman, and Weinman (2007) reported that, in a community sample involving ratings of patient vignettes, depression was rated as less responsive to treatment, more likely to persist, and more under the individual's control compared with anxiety. Thus, the accurate assessment of expectancies for change may depend on the symptom domain on which the items focus.

The modified version of the expectancy measure contains 20 items that focus specifically on the extent to which the respondent believes his or her depressive symptoms will improve in the future. Study 1 examined the convergent and discriminant validity of the DCES in a large nonclinical sample. Study 2 explored the ability of the DCES to predict change in depressive symptoms in an adult outpatient sample, a portion of whom received a brief intervention.

Study 1

Study 1 included a battery of measures that represent the following construct domains: negative thinking, depression, stress/anxiety, dispositional optimism and positive thinking, and social desirability. We predicted that scores on the DCES would correlate positively with measures of optimism and positive thinking and negatively with measures of anxiety and depression and

negative thinking. We also predicted that DCES scores would be uncorrelated with a social desirability response set and with age and gender.

Method

Participants. The sample consisted of 416 undergraduate students (61.5% female; 66% Caucasian) who identified themselves as experiencing problems with depression, including sadness or loss of interest in activities. Participants were recruited from two sites,1 the University of North Carolina at Greensboro and the University of Western Ontario, through web-based participation pool listings calling for individuals with "some difficulties with depression— for example, consistent sadness (at least mildly sad mood) or loss of interest in usual activities." The mean age of the sample was 18.95 years (*SD* = 2.15 years). On average, the sample reported depressive symptoms in the upper end of the mild range, with a mean on the Beck Depression Inventory (BDI-II) of 17.63 (*SD* = 10.33). Regarding history of psychiatric treatment, 31.7% reported that they had received psychotherapy or counseling for a psychological problem, and 14.7% reported that they had taken medications for a psychological problem. Participants completed the measures below in small groups using paper and pencil and received course credit for their participation.

Measures

Automatic Thoughts Questionnaire–Negative. The Automatic Thoughts Questionnaire–Negative (Hollon & Kendall, 1980) is a 30-item, 5-point (1 = *not at* all; 5 = *all the time)* Likert-type scale that assesses the frequency of negative automatic thoughts. This instrument exhibits excellent psychometric properties (Hollon & Kendall, 1980) and differentiates between depressed and nondepressed groups. The internal consistency (Cronbach's alpha) in this study was .97.

Automatic Thoughts Questionnaire–Positive. The Automatic Thoughts Questionnaire–Positive (Ingram & Wisnicki, 1988) assessed the frequency of positive automatic thoughts. Each of 30 items is rated from 1 (*not at* all) to *5* (*all the time*) with higher scores indicative of more frequent positive thoughts. The Automatic Thoughts Questionnaire– Positive has excellent psychometric properties (Burgess & Haaga, 1994; Ingram, Kendall, Siegle, Guarino, & McLaughlin, 1995). Cronbach's alpha was .97 in this study.

Beck Depression Inventory. The BDI-II (Beck, Steer, & Brown, 1996) is the most well-known instrument for assessing self-reported depressive severity. Each item is rated on a 4-point scale (0-3) scale, with total scores ranging from 0 to 63. The psychometric properties of this index are excellent in both clinical and undergraduate samples (see Dozois & Covin, 2004; Dozois, Dobson, & Ahnberg, 1998). Internal consistency in this study was excellent (Cronbach's α = .91).

Depression Anxiety Stress Scale. The Depression Anxiety Stress Scale (DASS-21) is an abbreviated form of the 42-item original scale (S. H. Lovibond & Lovibond, 1995). This

questionnaire measures symptoms of depression, anxiety and stress on a 4-point scale ranging from 0 (*Did not apply to me*) to 3 (*Applied to me very much, or most of the time*). The DASS-21 demonstrates excellent internal consistency (Antony, Bieling, Cox, Enns, & Swinson, 1998; P. F. Lovibond & Lovibond, 1995; S. H. Lovibond & Lovibond, 1995; Page, Hooke, & Morrison, 2007). This measure correlates well with convergent measures (P. F. Lovibond & Lovibond, 1995; S. H. Lovibond & Lovibond, 1995) and differentiates well among features of depression, psychophysiological arousal, and tension/agitation (Antony et al., 1998). The anxiety and stress scales, which were used in the current study, demonstrated excellent internal consistency (coefficient $\alpha = .84$ and .86, respectively).

Depression Expectancies for Change Scale. The DCES is intended to assess expectancy for change in depression. Respondents are asked to rate 20 items on a 5-point Likert-type scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale includes both optimistically and pessimistically worded items to reduce common method variance and avoid response set. This measure was adapted from the ACES, which has excellent psychometric properties and predicts treatment outcome in CBT for anxiety disorders (Dozois & Westra, 2005).

Dysfunctional Attitudes Scale–Short Form. The Dysfunctional Attitudes Scale (Weissman, 1979) is the most frequently cited cognitive measure related to depression (Dozois, Covin, & Brinker, 2003). Using nonparametric item response theory, Beevers, Strong, Meyer, Pilkonis, and Miller (2007) developed a psychometrically sound short form. The DAS-Short Form (DAS-SF_1) consists of 9 items each of which is rated on a 4-point scale (1 = *totally* agree; 4 = *totally* disagree). This instrument has excellent psychometric properties (see Beevers et al., 2007). Internal consistency in this study was excellent (Cronbach's $\alpha = .81$).

Generalized Expectancy for Success Scale–Revised. The Generalized Expectancy for Success Scale–Revised (GESSR; Hale, Fiedler, & Cochran, 1992) assesses future expectations for success in various life domains. Twenty-five items are rated on a 5-point scale ranging from 1 (*highly improbable*) to 5 (*highly probable*). Split-half reliability is excellent (.92). In addition, this instrument correlates in expected directions with optimism and self-esteem. The internal consistency in this study was .95.

Life Orientation Test–Revised. The Life Orientation Test–Revised (LOT-R; Scheier, Carver, & Bridges, 1994) assesses individual differences in optimism and positive expectancies about the future. This instrument is composed of 10 items (3 positively worded, 3 negatively worded, and 4 fillers). Each item is rated from 0 (*strongly disagree*) to 4 (*strongly agree*). Responses to negatively worded items are reverse-scored and the sum of positive and negative items provides an overall index of optimism. The internal consistency of the LOT-R is acceptable (Cronbach's $\alpha = .78$; see Scheier et al., 1994). Coefficient alpha in this study was .72.

Marlowe–Crowne Social Desirability Scale (10-Item Brief Version). The Marlowe–Crowne Social Desirability Scale (Crowne & Marlowe, 1960) is composed of 33 items rated true/false.

This inventory is the most widely adopted measure of social desirability (Beretvas, Meyers, & Leite, 2002). The 10-item Strahan–Gerbasi (1972) short form of this instrument was used in the current study to assess a social desirability response set. Coefficient alpha of the short scale in the current study was .60, consistent with previous studies (e.g., Loo & Thorpe, 2000).

The Hope Scale (Snyder et al., 1991) contains 8 items and 4 fillers assessing hopefulness in terms of a positive motivational state. Four items assess personal agency (determination to meet one's goals) and four items reflect pathways (appraisals of one's ability to meet goals). This instrument has acceptable reliability (coefficient alphas range from .74 to .84; temporal stability ranges from .73 to .85 across 3-10 weeks) and good construct validity (Snyder et al., 1991). For the purposes of the current study, only the results for the total scale score are reported; internal consistency in the current study was good (Cronbach's $\alpha = .85$).

Table 1. Item Analysis and Internal Consistency of the Depression Expectancies for Change Scale

Item	*M*	*SD*	Item–total *r*
1. I feel pessimistic that my depression could ever change for the better.[a]	3.66	1.14	.48
2. Even though I try, nothing seems to help improve my mood.[a]	3.61	1.10	.54
3. It would be extremely difficult or impossible to solve my problems with depression.[a]	3.54	1.19	.31
4. I have had some positive experiences with being able to control my mood by talking positively to myself.	3.46	1.12	.41
5. My depression is too severe to benefit from treatment.[a]	4.38	0.88	.51
6. Self-help methods may help others control their depression but they won't work for me.[a]	3.88	1.14	.57
7. I don't believe I will ever feel truly happy.[a]	3.91	1.21	.50
8. Doing something for pleasure or trying to accomplish something won't help to improve my mood.[a]	3.99	1.02	.51
9. When I force myself to be more active, it's not as bad as I thought.	3.76	1.03	.37
10. I have had some success in reducing my depressive symptoms.	3.63	0.99	.45
11. There is very little anyone could do to help me resolve my depression.[a]	3.98	1.05	.46
12. Even when I try to talk positively to myself, it doesn't help me feel better.[a]	3.74	1.13	.63
13. Positive thinking helps me feel better about things.	3.57	1.06	.53
14. There is no solution to my depression.[a]	4.22	0.94	.54
15. I am optimistic that my depression can change for the better.	3.70	1.04	.51
16. I have found that I can reduce feelings of depression by telling myself to relax or by meditating.	3.28	1.15	.40
17. I'll never be able to control my mood.[a]	3.92	1.08	.43
18. I believe it's quite possible for me to feel less "blue."	3.67	1.03	.44
19. If I work hard, I can have a positive impact on my problems with	3.77	0.99	.59

depression.			
20. There are factors contributing to my depression that I can learn to control.	3.72	0.98	.46

[a.] Pessimistically worded item, reverse scored.

Procedure

Informed consent procedures consistent with the respective university policies were followed, and participants completed the battery of questionnaires presented in random order.

Results

Prior to initial analysis, DCES items worded in a pessimistic tone were reverse-scored such that higher scores on all items reflected more optimistic responding.

Missing Data. The rate of missing data was extremely low (less than .01% for all values). There were no significant differences between participants with and without missing data on age, gender, or depression severity (as indicated by BDI-II scores). For the initial item analyses and assessment of internal consistency, only participants with complete DCES data were included (n = 395). For the factor analysis, missing data were handled with pairwise deletion (n = 412-416). For the correlational analyses with other measures, mean replacement was used for missing items (n = 416).

Item Analysis and Internal Consistency. The internal consistency of the DCES was assessed first with Cronbach's alpha, which was .90 and did not change considerably with the removal of any single scale item. This alpha value was greater than the generally accepted minimum range of .70 to .80. Table 1 summarizes the data from the item analysis. Second, the average interitem correlation among the DCES items was r = .31, which is above the generally accepted minimum of .30.

The univariate skewness and kurtosis of the DCES items were examined. Skewness values were good to acceptable for all items. Kurtosis values were also good for all items except Question 5 ("My depression is too severe to benefit from treatment"). Given that the sample consisted largely of students with subclinical depressive symptoms, it is not surprising that most individuals disagreed or strongly disagreed with that statement.

Examination of the Q-Q Plots of the DCES items revealed minor departures for Questions 5 and, to a lesser extent, Question 14 ("There is no solution to my depression"). Regarding the latter, the data showed that most participants disagreed or strongly disagreed with the statement. A clinical sample that includes individuals who have tried (unsuccessfully) multiple treatments in the past would likely show more variability in response. The multivariate normality of the DCES items was also examined (DeCarlo, 1997). Mardia's test (Mardia, 1970) indicated significant departures from multivariate kurtosis ($b2,d$ = 535.25, p < .001) and Small's test (Small, 1980) indicated significant departures from multivariate skewness ($Q1$ = 422.00, p < .001).

Table 2. DCES Pattern Matrix for the Forced 2-Factor Solution Using Principal Axis Factoring With Oblique Rotation.

Item	Factor 1	Factor 2	h^2
1. **I feel pessimistic that my depression could ever change for the better.**	**.65**	**–.01**	**.42**
2. **Even though I try, nothing seems to help improve my mood.**	**.74**	**–.04**	**.53**
3. **It would be extremely difficult or impossible to solve my problems with depression.**	**.54**	**–.08**	**.27**
4. I have had some positive experiences with being able to control my mood by talking positively to myself.	.08	.53	.32
5. **My depression is too severe to benefit from treatment.**	**.66**	**.05**	**.47**
6. **Self–help methods may help others control their depression but they won't work for me.**	**.71**	**.06**	**.53**
7. **I don't believe I will ever feel truly happy.**	**.72**	**–.02**	**.52**
8. **Doing something for pleasure or trying to accomplish something won't help to improve my mood.**	**.73**	**.00**	**.53**
9. When I force myself to be more active, it's not as bad as I thought.	–.11	.63	.36
10. I have had some success in reducing my depressive symptoms.	–.14	.73	.48
11. **There is very little anyone could do to help me resolve my depression.**	**.68**	**–.03**	**.45**
12. **Even when I try to talk positively to myself, it doesn't help me feel better.**	**.73**	**.06**	**.56**
13. Positive thinking helps me feel better about things.	.31	.51	.45
14. **There is no solution to my depression.**	**.72**	**.04**	**.54**
15. I am optimistic that my depression can change for the better.	.06	.66	.46
16. I have found that I can reduce feelings of depression by telling myself to relax or by meditating.	.13	.48	.29
17. **I'll never be able to control my mood.**	**.64**	**.06**	**.43**
18. I believe it's quite possible for me to feel less "blue."	.02	.57	.33
19. If I work hard, I can have a positive impact on my problems with depression.	.03	.74	.57
20. There are factors contributing to my depression that I can learn to control.	–.06	.71	.48

Note. DCES = Depression Expectancies for Change Scale. Pessimistically worded (reverse scored) items are shown in boldface.

Factor Structure. Bartlett's test of sphericity ($p < .001$) and the Kaiser–Meyer–Olkin measure of sampling adequacy (.91) supported the factorability of the data. Because the assumption of multivariate normality was violated, principal axis factoring (with oblique rotation) was used to explore the factor structure of the DCES (Fabrigar, Wegener, MacCallum, & Strahan, 1999). A parallel analysis was conducted following the procedures described by O'Connor (2000). Using 95th percentile random eigenvalue and generation of 1,000 parallel data sets, the eigenvalues for the first 3 factors generated by the factor analysis (6.99, 3.18, and 1.21) exceeded those

generated by the random data sets (6.40, 2.38, and 0.68), as did the eigenvalues of several factors that were judged to be trivial (e.g., containing a single item[2]).

After rotation, the structure matrix showed that Factor 1 included all the items that were reverse-coded (worded in a pessimistic tone), whereas the straightforward items (worded in an optimistic tone) loaded more strongly on the other two factors (eight items loading positively on Factor 2 and four loading negatively on Factor 3), which were correlated at $r = -.42$. The fit of the three-factor model was statistically better than the two-factor model (Bayesian information criterion = 20553.93 vs. 20636.95, respectively). However, Factor 3 added little to the total amount of variance explained (4% after rotation), and items that had strong loadings on Factor 3 also had strong loadings on Factor 2, suggesting substantial overlap between the two factors. Therefore, a two-factor solution appeared to provide the more parsimonious solution.

The analysis was repeated with a forced two-factor solution. The rotated solution accounted for 46% of the variance, and the factor loadings are shown in Table 2. The two factors were moderately correlated at $r = .33$, suggesting that a higher order factor does not entirely explain the variance in item responses. We also examined the average correlations among pairs of items with similarly toned wording (reversed-reversed or straightforward-straightforward) versus reversed-straightforward pairs. Correlations among similarly coded items ranged from $r = .20$ to $r = .63$ (all correlation coefficients were significant at $p < .001$, adjusted using the Holm method [Holm, 1979] to control familywise Type I error rate) with a mean of $r = .44$. For items with opposite coding, correlations ranged from $r = -.02$ to $r = .51$ (the majority of which were nonsignificant) with a mean of $r = .17$.

These findings suggested that a combination of common and unique variance contributed to the two factors. Thus, we created separate subscales of the DCES by separately averaging the subscale items to examine how these two categories of items performed in subsequent analyses of convergent and discriminant validity. We refer to the scale containing the 11 pessimistically worded items as the DCES-P and the scale containing the 9 optimistically worded items as the DCES-O. We also reverted back to the original response scales to make interpretation more intuitive, such that higher scores on the DCES-P indicate more pessimistic expectancies and higher scores on the DCES-O indicate more optimistic expectancies. The DCES-P had a group mean in our sample of 2.01 ($SD = 0.84$) and the DCES-O had a mean of 3.60 ($SD = 0.71$).

Convergent and Discriminant Validity. There were notable differences between the two subscales in terms of the strength and direction of their relationships with the other questionnaire measures. Table 3 shows the correlation coefficients; critical p values were again adjusted using the Holm (1979) method. Although both measures were significantly correlated with severity of depressive symptoms and the directions of the correlations, the strength of the correlation coefficients was substantially higher for the DCES-P compared with the DCES-O in all cases (except for the short Marlowe–Crowne Scale, which was uncorrelated with both subscales). The difference between the DCES-P and DCESO correlations with each of the concurrent measures

was significant at $p < .01$ using Meng, Rosenthal, and Rubin's Z (1992; Silver, Hittner, & May, 2006) in all cases except for the Marlowe–Crowne.

DCES-P scores were moderately correlated with symptom measures, such that higher scores on the DCES-P (indicating more pessimistic expectations for change) were significantly associated with higher depression, stress, and anxiety as well as more negative automatic thoughts and dysfunctional attitudes. Higher DCES-P scores also were significantly associated with fewer positive automatic thoughts, lower expectancies for success, lower dispositional optimism, and lower perceived ability to cope with negative emotions.

Higher scores on the DCES-O were moderately correlated with higher expectancies for success and dispositional optimism; weak but statistically significant correlations were also found with positive and negative automatic thoughts and with depressive symptoms. DCES-O scores were uncorrelated with the ability to cope with negative emotions, stress, anxiety, and dysfunctional attitudes.

Scores on both DCES subscales were uncorrelated with age ($r = .01$ for both subscales, *ns*) and gender ($r = .02$ with DCES-P and $r = .02$ with DCES-O, *ns*).

Table 3. Bivariate Correlation Coefficients of DCES Subscale Scores With Other Measures.

Measure	DCES-P	DCES-O
BDI-II .57**	–.18**	
ATQ–Negative	.53**	–.14*
ATQ–Positive	–.41**	.14*
Dysfunctional Attitude Scale	.40**	–.11
DASS–Stress	.38**	–.04
DASS–Anxiety	.41**	–.10
Generalized Expectancy for Success Scale	–.49**	.30**
Life Orientation Test	–.46**	.26**
Hope scale (total score)	–.29**	.07
Marlowe–Crowne (social desirability)	–.03	–.05

Note. DCES-P = Depression Expectancies for Change Scale with pessimistically worded items; DCES-O = Depression Expectancies for Change Scale with optimistically worded items; ATQ = Automatic Thoughts Questionnaire; BDI = Beck Depression Inventory; DASS = Depression Anxiety Stress Scales. *Adjusted $p < .05$. **Adjusted $p < .01$.

Summary

The results from Study 1 showed good internal consistency of the DCES items as indicated both by Cronbach's alpha and by the mean interitem correlation. Regarding the factor structure, the combination of reversed and straightforward items almost invariably leads to the extraction of separate factors for those two categories of items (Herche & Engelland, 1996). Dozois and Westra (2005) also reported factor separation based on reversed and straightforward items on the

ACES. However, the data from anxious participants in that study supported the merging of those two factors whereas our data from dysphoric participants in the current study did not.

DCES-P scores showed the predicted pattern of significant correlations with measures of depression, anxiety, positive and negative thoughts, dysfunctional attitudes, hopefulness, general expectancies for success, and dispositional optimism and were uncorrelated with social desirability, age, and gender. DCES-O scores showed similar, but much weaker, relationships with depression, positive and negative thoughts, expectancies for success, and dispositional optimism. Although it is not surprising that the DCES-O subscale shows less overlap with measures of negative mood and negative cognitions, the somewhat weaker associations even with other measures of optimism suggest that it may be tapping into a component of expectancies that is relatively unique.

Study 2

In Study 2, we investigated the performance of the DCES in a clinical sample. The goals of Study 2 were to assess the internal consistency and intercorrelation of the two DCES subscales in an independent, clinical sample; assess the relationship between the DCES and ACES; and examine the extent to which the two DCES subscales predict change in depressive symptoms in a clinical sample.

Method

Participants. Participants in Study 2 were 63 adults with a diagnosis of depression and/or anxiety disorder seeking outpatient treatment during a 24-month period at the Mental Health Outpatient Program at Sheldon Chumir Health Centre in Calgary. Of 130 patients invited into the study, 44 (34%) declined. Of the remaining 86, 71 were deemed eligible based on an evaluation using the SCID (Structured Clinical Interview for *DSM-IV-TR*; First, Spitzer, Gibbon, & Williams, 2002) 4 were ineligible, and 16 failed to return for the evaluation. Eight of the 71 eligible participants (2 in the wait-list condition, 1 in CBT, and 3 in the support condition) had missing data at Time 1 and, therefore, were not included in the current analyses.

Of the final sample of 63 participants, 63% were diagnosed with either major depressive disorder or dysthymia and 81% were diagnosed with any anxiety disorder (including obsessive compulsive disorder, posttraumatic stress disorder, panic disorder, agoraphobia, social phobia, specific phobia, or generalized anxiety disorder). Mean depression severity at baseline as indicated by BDI-II scores was 29.44 (*SD* 10.68). The sample was largely female (63.5%) and Caucasian (79.4%) with a mean age of 40.0 (*SD* = 14.0). Participants were not compensated for their participation.

Measures and Procedures. Participants were randomly assigned either to one of two brief, 6-session interventions (basic CBT skills [*n* = 21] or unstructured support [*n* = 17]) or to a wait-list control condition (*n* = 25). The CBT skills condition was designed to increase knowledge of the

skills and concept of CBT. Group sessions focused on teaching both behavioral and cognitive techniques for dealing with depression and anxiety. Group leaders included one of the authors (BBD, a PhD-level clinical psychologist), PhDlevel clinical psychology practicum trainees, and predoctoral clinical psychology residents. The support condition was developed to provide emotional support from other participants under the guidance of a clinician. The goal of the support group was to provide a safe and supportive environment for individuals to identify and overcome struggles they share with other participants. Support group leaders included a PhD-level clinical psychologist, a psychiatrist, a registered nurse, or a social worker.

The BDI-II and DCES scales (described above) were administered at baseline along with the ACES (Dozois & Westra, 2005), and the BDI-II was administered again 6 weeks later (following the 6-session intervention or a 6-week no-treatment waiting period). Given that the results from Study 1 suggested that the DCES is best conceptualized as having two separate subscales, mean scores for DCES-O and DCES-P subscales were calculated. Again, the original scaling for both scales was retained, such that higher scores on the DCES-O and the DCES-P indicate more optimistic and pessimistic expectancies, respectively.

Data Structure and Analytic Strategy. Multilevel modeling was used to examine the extent to which changes in BDI-II scores are associated with baseline predictor variables, allowing for the use of all participants, even those with missing data. The data had a two-level structure: a withinperson level (Level 1; BDI-II scores at two time points) and a between-person level (Level 2; DCES and ACES scores as well as the number of intervention sessions completed). Multilevel modeling involves the calculation of a slope for the Level 1 variable, in this case BDI-II scores at baseline and again 6 weeks later, and examines the extent to which the Level 2 predictors (centered at the grand mean; Enders & Tofighi, 2007) show an association with the slope values. A negative BDI-II slope indicates symptom improvement whereas a positive slope indicates increases in depressive symptoms. Models were tested using MPlus 6.1 using maximum likelihood with robust standard errors. Coefficients were unstandardized.

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Results

The two DCES subscales showed good internal consistency in the clinical sample, α = .75 for the DCES-P and α = .82 for DCES-O. The two subscales were moderately correlated, $r = -.62$ ($p < .001$), a stronger relationship compared with that found in the Study 1 sample. ACES scores, all coded in the optimistic direction, were significantly correlated with DCES subscale scores, $r = -.60$ ($p < .001$) for the DCES-P and $r = .64$ ($p < .001$) for the DCES-O.

Of the 63 participants, 7 in the wait list and 9 in the intervention condition did not provide a second BDI-II score. The model included four predictors, DCES-P and DCES-O scores, ACES scores, and number of intervention sessions (coded as 0 for the wait-list group). The mean number of sessions attended by participants in the intervention conditions was 4.5 ($SD = 1.9$). Results showed that only DCES-O scores predicted the slope of change in BDI-II scores ($b = -6.96$, $z = -2.89$, $p < .01$). The DCES-P ($b = 0.96$, $z = 0.32$, *ns*) and ACES ($b = 0.23$, $z = 1.26$, *ns*) were not significant predictors, nor was the number of intervention sessions attended ($b = -0.04$, $z = -0.09$, *ns*). Figure 1 shows a scatterplot of the BDI-II slopes by DCES-O scores.

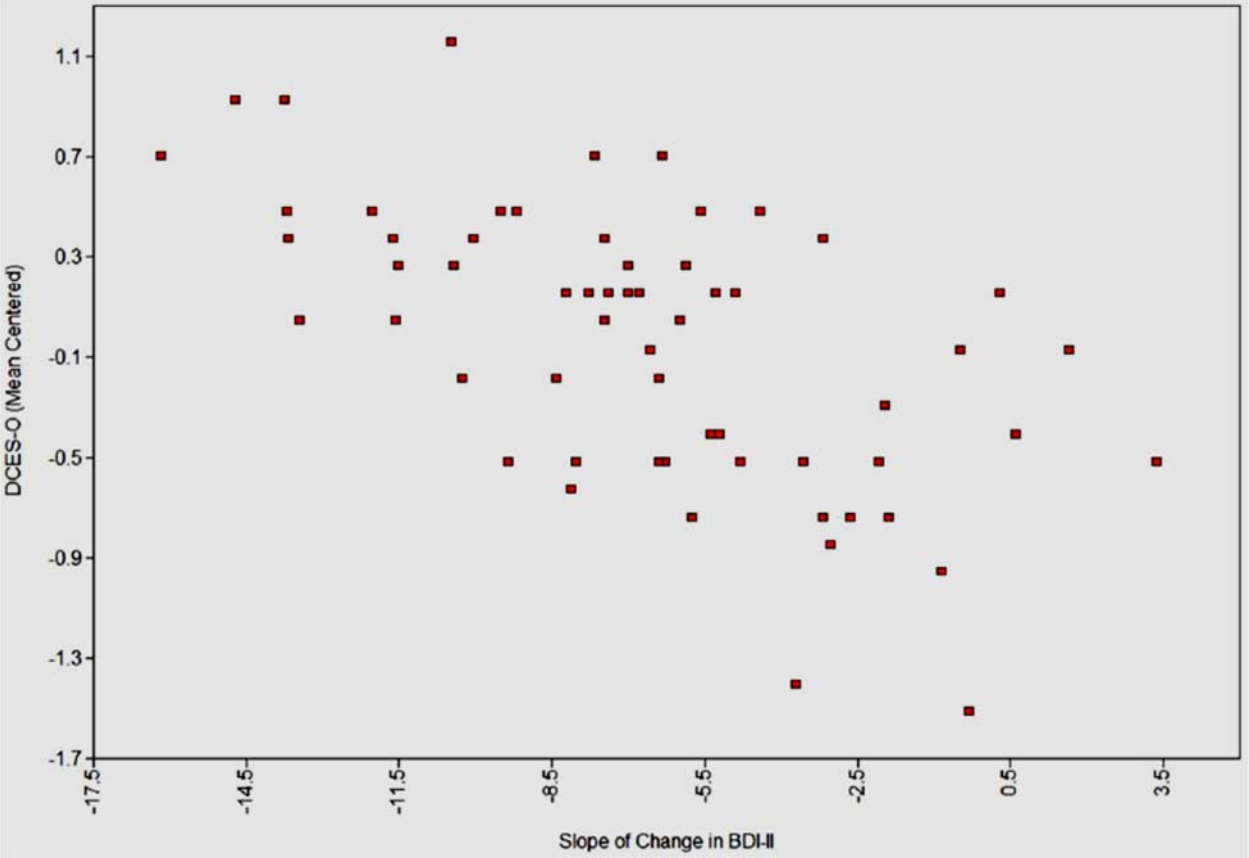

Figure 1. Scatterplot showing Beck Depression Inventory (BDI-II) slopes across levels of Depression Change Expectancy Scale–optimistically worded items (DCES-O) scores.

Note. Negative values on the *x*-axis indicate symptom improvement.

General Discussion

Although patients' expectancies for improvement have been identified as an important construct in treatment research, few measures with established reliability and validity are available, and researchers often rely on one or two created items to assess expectancies. The purpose of the current study was to introduce and evaluate the psychometric properties of an empirically supported measure of expectancies for change specifically targeting individuals with depressive symptoms. This measure, the DCES, is a modified version of an expectancy measure developed and validated for individuals with anxiety (Dozois & Westra, 2005). The DCES includes 20 items assessing both broad expectations for change as well as expectations that the respondent's depressive symptoms will improve with treatment or self-help strategies.

Given that depression is associated with attentional biases toward negative stimuli (including words), endorsement of optimistic versus pessimistic items about expectancies regarding future improvement may be better conceptualized as separate dimensions in depressed individuals than as opposite poles of a single dimension. The magnitude of the correlation between the subscales assessing optimistic and pessimistic items was higher in our clinical sample compared with the nonclinical sample but indicated in both samples that the two subscales are not completely redundant. Our results suggest that it is particularly important to assess expectancies that are framed *both* in optimistic and in pessimistic terms for individuals with depressive symptoms, as these items were differentially predictive of short-term clinical outcomes. Our data showed that improvement in depressive symptoms over a 6-week period were strongly associated with more optimistic expectancies but were unrelated to pessimistic expectancies.

It should be noted that replication of the factor structure and divergence of the optimistic and pessimistic subscales of the DCES in individuals varying in depression severity is needed. The two-factor solution took into account both statistical and conceptual considerations, and the DCES-O and DCES-P showed expected patterns of convergent and divergent validity, good internal consistency in a clinical sample, and differential predictive validity in relation to short-term improvement in depressive symptoms. This solution accounted for 46% of the total variance, which is modest but relatively higher than that reported for the ACES (Dozois & Westra, 2005).

An important question concerns the degree of overlap between the original ACES and the DCES. We found that the two DCES subscales were significantly correlated in the expected direction with ACES scores. However, whereas the ACES failed to predict changes in depressive symptoms in our clinical sample, the DCES-O was strongly associated with symptom improvement. This finding suggests that the DCES is assessing a component of expectancies that is uniquely related to depression change.

Knowledge of expectancies for change may help clinicians to determine individual readiness for action-oriented change strategies (e.g., cognitive therapy, behavioral activation) or whether

prelude interventions (e.g., motivational interviewing; Arkowitz, Westra, Miller, & Rollnick, 2008; Westra & Dozois, 2006) are needed to address low expectancies for change or to concentrate on ambivalence about change. The DCES may also be helpful in therapy process research. Understanding the dynamic interplay among patient expectations for change, homework compliance, therapist alliance, and treatment outcome (Kazantzis, Whittington, & Dattilio, 2010; Westra et al., 2009), for example, would be enhanced with reliable and valid instruments to assess these constructs.

The sample size in the current clinical study was modest and included participants in both treatment and wait-list conditions. It is important to assess the role of expectancies not only within the treatment context but also in the context of more naturalistic change; however, the current study lacked adequate power to assess more complex interactions with treatment/control conditions. Additional research examining the applied utility of the DCES, for example, by testing its relationship to aspects of the therapy process and to trajectories of change involving more frequent symptom assessment, is needed. Notwithstanding these limitations, the results of this study suggest that the DCES is a promising measure of expectancies for change and warrants further investigation.

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Notes

1. The sample from the University of North Carolina at Greensboro site was more dysphoric than the participants from the University of Western Ontario site—$t(414) = 4.59$; $p < 01$; $d = .45$—despite the use of identical recruitment procedures. Therefore, all analyses were conducted for the two groups separately as well as for the combined sample. However, because the pattern of results was replicated across the two samples, only the combined results are presented here.

2. Full results from the parallel analysis are available on request from the first author.

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