Problem-solving therapy for depression: A meta-analysis ☆

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A B S T R A C T

Problem-Solving Therapy (PST) is a cognitive-behavioral intervention that focuses on training in adaptive problem-solving attitudes and skills. The purpose of this paper was to conduct a meta-analysis of controlled outcome studies on efficacy of PST for reducing depressive symptomatology. Based on results involving 21 independent samples, PST was found to be equally effective as other psychosocial therapies and medication treatments and significantly more effective than no treatment and support/attention control groups. Moreover, component analyses indicated that PST is more effective when the treatment program includes (a) training in a positive problem orientation (vs. problem-solving skills only), (b) training in all four major problem-solving skills (i.e., problem definition and formulation, generation of alternatives, decision making, and solution implementation and verification), and (c) training in the complete PST package (problem orientation plus the four problem-solving skills).

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Contents

Problem-solving therapy (PST) is a cognitive-behavioral intervention that focuses on training in adaptive problem-solving attitudes and skills. The aim of this positive approach to clinical intervention is to reduce and prevent psychopathology and enhance positive well-being by helping individuals cope more effectively with stressful problems in living. Originally outlined by D'Zurilla and Goldfried (1971), the theory and practice of PST has been refined and revised over the years by D'Zurilla, Nezu, and their associates (D'Zurilla, 1986; D'Zurilla & Nezu, 1999, 2007; Nezu, Nezu, Friedman, Faddis, & Houts, 1998; Nezu, Nezu, & Perri, 1989).

PST is based on a relational/problem-solving model of stress and well-being (psychological, social, and health functioning) in which *social problem solving* (i.e., real-life problem solving) is assumed to play an important role as a mediator and a moderator of the relationship between stressful life events (major negative events as well as daily problems) and well-being (D'Zurilla & Nezu, 1999, 2007). *Effective* problem solving is expected to reduce the negative impact of stress on well-being and to enhance positive functioning, whereas *ineffective* problem solving is expected to increase the negative impact of stress on well-being. During the past three decades, numerous empirical studies have provided substantial support for these assumptions (see reviews in Chang, D'Zurilla, & Sanna, 2004; D'Zurilla & Nezu, 2007, in press; Nezu, 2004; Nezu, Nezu, & D'Zurilla, in press).

Within this model, the concept of *social problem solving* consists of two partially independent components: (1) problem orientation and (2) problem-solving style (D'Zurilla & Goldfried, 1971; D'Zurilla & Nezu,

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1982, 1999, 2007). *Problem orientation* is a metacognitive process that primarily serves a motivational function in social problem solving. This process utilizes a set of cognitive-emotional schemas that reflects a person's general awareness and appraisals of problems in living as well as his or her own problem solving ability.

Problem-solving style, on the other hand, refers to the cognitive and behavioral activities by which a person attempts to understand problems in living and find effective "solutions" or ways of coping with them. The major specific goals of PST are to: (1) foster the adoption of a *positive* problem orientation, and (2) facilitate the acquisition and real-life application of a *rational* problem-solving style. A positive problem orientation consists of the general disposition to: (a) appraise a problem as a "challenge" or opportunity for benefit, (b) believe that problems are solvable, (c) believe in one's own ability to solve problems effectively, and (d) recognize and accept the fact that effective problem solving takes time and effort. A rational problem-solving style involves the deliberate and systematic application of four major problem-solving skills: (1) problem definition and formulation, (2) generation of alternative solutions, (3) decision making, and (4) solution implementation and verification (D'Zurilla & Goldfried, 1971).

Based on a large number of randomized controlled trials conducted over the past several decades, PST has proven to be an appropriate and effective treatment for a highly diverse population of adolescents and adults with a wide range of psychological, behavioral, and health disorders (see reviews in Chang et al., 2004; D'Zurilla & Nezu, 2007, in press; Nezu, 2004; Nezu et al., in press). In addition to this body of research, Malouff, Thorsteinsson, and Schutte (2007) recently conducted a global meta-analysis on efficacy of PST in reducing mental and physical health problems based on 32 studies encompassing 2895 participants. PST was found to be equally effective as other psychosocial treatments and significantly more effective than no treatment, treatment as usual, and attention placebo treatments. The results also showed that PST was more effective when it included a problem orientation component (rather than focusing only on problem-solving skills) and when a developer of PST helped conduct the study. The latter result might have reflected the effects of problem orientation training because all of the studies involving a developer of PST included problem orientation in the treatment package.

In addition to this global meta-analysis, there is a need for other meta-analyses on efficacy of PST that focus on specific clinical problems and disorders. One recent meta-analysis conducted by Cuijpers, van Straten, and Warmerdam (2007) evaluated efficacy of PST for depressive symptomatology based on 13 randomized controlled studies involving a total of 1133 participants. Based on their results, the authors concluded that PST is an effective treatment for depression (compared to control conditions such as waiting-list, care as usual, and placebo). However, because they found substantial heterogeneity in the results across studies, including the results of sub-group analyses designed to identify moderator variables, they also concluded that more research is needed to identify what variables or conditions determine whether PST is more or less effective.

The purpose of the present study was to conduct a meta-analysis on PST for reducing depressive symptomatology that improved upon and expanded the Cuijpers et al. analysis. First, we added seven studies beyond the 13 studies that were included in the Cuijpers et al. analysis. Second, we compared PST to alternative psychosocial treatments and support/attention conditions, resulting in a more conservative estimation of PST effects. Third, we attempted to replicate the finding reported by Malouff et al. (2007) that the inclusion of a problem orientation component increases the effectiveness of PST. In addition, because some studies focused only on two or three of the four major problem-solving skills, we also examined efficacy of including all four problem-solving skills in the treatment package as well as efficacy of including the complete PST package (i.e., problem orientation plus all four problem-solving skills. Finally, based on the recommendation by D'Zurilla and Nezu (2007), we also evaluated efficacy of including a multi-dimensional measure of social

problem-solving abilities in the study (e.g., the Social Problem-Solving Inventory-Revised; D'Zurilla, Nezu, & Maydeu-Olivares, 2002). According to D'Zurilla and Nezu (2007), a comprehensive pre-treatment assessment of social problem-solving abilities helps to identify the major deficits that should be focused on in PST which, in turn, should increase treatment effectiveness.

1. Method

1.1. Identification and selection of studies

To identify studies for this meta-analysis, computerized literature searches were conducted using psycINFO, PubMed, and Dissertation Abstracts. The following keywords were used to target articles to do with PST: *problem solving therapy, social problem solving therapy, problem solving training, and social problem solving training.* The following keywords were used to target articles to do with depressive symptomatology: *depression, dysthymia, depressed, depressive, suicide, and suicidal ideation.* All of the PST specifiers were used in combination with all of the depressive symptomatology specifiers. Searches of reference lists and review articles were also carried out. Eligible studies needed to be published in English, and this constraint resulted in the exclusion of one study.

Eligible studies were required to feature PST as a treatment for depressive symptomatology. Only studies that utilized pure-form PST were included. Studies that combined PST with other types of cognitive-behavioral therapy were excluded. Additionally, studies were also excluded that used interventions that were described as "based" on PST but did not identify the specific treatment components. Studies were also required to include some sort of comparison group, with no restrictions put on the nature of this comparison group. The types of comparison groups included alternative psychosocial therapies (e.g., rational-emotive therapy), medication treatment, support/attention control (e.g., supportive therapy, attention/placebo), and waiting-list control.

Included studies were required to enroll participants with depressive symptomatology. Depression, subclinical depression, dysthymia, and post partum depression are examples of the target symptoms from some of the studies that were included in this meta-analysis. No specific cutoff criteria for depressive symptomatology were imposed. Some studies used DSM criteria in order to enroll participants; others used a cutoff score of their choosing on a measure of depressive symptomatology. When studies included more than one measure of depression, we used data from the Beck Depression Inventory (Beck, Steer, & Brown, 1996) when possible. The Beck Depression Inventory (BDI) was the most commonly included measure of depression in the studies included in this meta-analysis. Studies involving participants of any age were eligible for inclusion. Studies in which participants had a comorbid diagnosis (including alcohol and substance abuse) were excluded.

The literature search yielded 25 studies that reported outcomes of PST as a treatment for depressive symptoms. Four studies were excluded because they lacked sufficient statistical information to calculate an effect size. These studies will be reviewed in the Discussion section of this paper. One study was excluded because its sample overlapped with the population of an included study. In all, 20 studies were included in the present paper. For the post-treatment time point a final sample of 19 studies containing 21 independent samples was yielded. For the follow-up time point a final sample of 11 studies containing 11 independent samples was yielded.

1.2. Calculation of effect sizes

Standardized mean difference effect sizes were calculated with treatment groups and comparison groups using Comprehensive Meta Analysis (CMA); Borenstein, Hedges, Higgins, and Rothstein (2005). Where there was more than one comparison group, the group that ranked higher on the following rank-ordered list was selected: (1)

alternative psychosocial therapy, (2) medication treatment, (3) support/attention control, and (4) no treatment (i.e., waiting-list). The effect size estimate (d) was used, which corrects for small sample bias (Hedges & Olkin, 1985). Means and standard deviations were used whenever they were provided. In their absence, the proportion of individuals who improved was used. Additionally, there was one post-treatment sample where means and t-test data was used, one post-treatment sample where treatment group size, control group size, p-value, and information about the direction of the effect was used, and one follow-up sample where treatment group size, control group size, p-value, and information about the direction of the effect was used.

1.3. Component analyses

As noted earlier, in addition to evaluating efficacy of PST compared to other treatment and control groups, we also used moderation analyses to evaluate efficacy of including several different treatment components in the PST package: (1) problem orientation training, (2) training in all four problem-solving skills (i.e., problem definition and formulation, generation of alternative solutions, decision making, and solution implementation and verification), (3) training in the complete PST package (i.e., problem orientation plus the four problem-solving skills), and (4) measuring social problem-solving abilities. These components were examined using CMA's ANOVA analog.

2. Results

2.1. Post-treatment results

The dependent variable was found to be heterogeneous, $Q(20) = 184.50$, $p < .01$, indicating variability in study outcomes. A random effects model was adopted to accommodate both within and between study variance. Random effects models yield larger confidence intervals and allow for greater generalizability, but have reduced power to detect effects. An examination of the random effects model revealed a significant small-to-medium effect size (Cohen, 1988). Based on the 21 samples that were included in the post-treatment meta-analysis (total $N = 1264$), the standardized mean difference effect size was $d = .40$, $p < .05$. This indicates that participants with depressive symptomatology who received a PST intervention experienced a significant reduction in their symptoms relative to participants in comparison groups who did not receive PST. The fail-safe N for the post-treatment effect size was 99 studies. This indicates that 99 studies with non-significant results would need to be located and added to the present meta-analysis in order to reduce the results to a non-significant level. Effect sizes ranged from −1.15 to 3.80. A complete list of effect sizes appears in Table 1.

Regarding efficacy of PST as compared to other types of comparison groups, (alternative psychosocial therapy, medication treatment, support/attention control groups, or waiting-list control groups), the between group variance was $Q(3, 16) = 14.74$, $p < .01$. PST was found to be equally effective as alternative psychosocial therapies, $d = .17$, $p = .68$; and medication treatment, $d = −.13$, $p = .23$, but not significantly more effective than these interventions. However, PST was found to be significantly more effective than supportive therapy and attention control groups, $d = .45$, $p < .001$; and likely more effective than waiting-list control groups, $d = 2.38$, $p = .09$. Although the p-value for the comparison with waiting-list groups indicates only borderline significance, it should be noted that this comparison is based on only two samples. Considering the magnitude of the effect size and the fact that PST was found to be significantly more effective than support/attention, we cautiously conclude that PST is also significantly more effective than waiting-list conditions.

With regard to the Problem Solving Therapy component analyses, the first significant result was in favor of including training in problem orientation. The mean effect size for the group of studies that used problem orientation training was significantly larger, $d = .80$, than the

Table 1
Effect sizes.

Study	Target symptom of the study	Measure of depression	N (post-tx)	Comparison group	ES post-treatment	ES at follow up
Alexopoulos, Raue, and Arean (2003)	Major depression with executive dysfunction	HRSD/HAM-D	25	Supportive therapy/attention control	1.09	–
Arean et al. (1993)	Major depression	BDI	47	Named therapy	.14	−.12
Barret et al. (2001)	Dysthymia	HRSD/HAM-D	72	Drug therapy	−.61	–
Barret et al. (2001)	Minor depression	HRSD/HAM-D	57	Drug therapy	.11	–
Biggam and Power (2002)	Suicidal risk/inadequate coping/OR bullied	HADS-D	46	WLC or No treatment	.96	1.40
Dowrick et al. (2000)	Various depressive and adjustment disorders	BDI	172	Named therapy	–	.38
Fitzpatrick, Witte, and Schmidt (2005)	Suicidal ideation	BDI	110	Supportive therapy/attention control	.36	.09
Frank et al. (2002)	Minor depression	HRSD/HAM-D	156	Drug therapy	−.24	–
Lerner and Clum (1990)	Suicidal ideation	BDI	18	Supportive therapy/attention control	.58	1.17
Lynch, Tamburrino, and Nagel (1997)	Minor depression	BDI	16	Unclear	1.14	–
Lynch, Tamburrino, Nagel, and Smith (2004)	Mild depression	BDI	18	Supportive therapy/attention control	.46	–
Malouff, Lanyon, and Schutte (1988)	Divorce related dysphoria	BDI	19	Named therapy	−.46	−.19
Mynors-Wallis, Gath, Lloyd-Thomas, and Tomlinson (1995)	Major depression	BDI	56	Drug therapy	.29	–
Mynors-Wallis, Gath, Day, and Baker (2000)	Major depression	HRSD/HAM-D	75	Drug therapy	−.35	.14
Nezu (1986)	Unipolar depression	BDI	20	Named therapy	1.34	1.98
Nezu and Perri (1989)	Unipolar depression	BDI	28	Named therapy	1.55	1.02
Nezu, Nezu, Felgoise, McClure, and Houts (2003)	Psychological distress	HRSD/HAM-D	89	Named therapy	3.80	–
Sahler et al. (2002)	Negative affectivity	POMS-D	92	Supportive therapy/ Attention control	.36	.32
Schmitt (1988)	Unipolar depression	BDI	29	Named therapy	−.14	.17
Tezel and Gozum (2006)	Post partum depressive symptoms	BDI	62	Named therapy	−1.15	–
Williams et al. (2000)	Dysthymia	HRSD/HAM-D	120	Drug therapy	.11	–
Williams et al. (2000)	Minor depression	HRSD/HAM-D	99	Drug therapy	−.20	–

Note: HRSD/HAM-D = Hamilton Rating Scale for Depression; BDI = Beck Depression Inventory; WLC = Waitlist control; "−" indicates that there was no follow-up data provided; "Unclear" indicates that the primary article did not clearly specify that type of comparison group that was employed. (This study was excluded from the analysis of efficacy of PST as compared to other types of comparison groups.)

Table 2
Component analyses.

Variable	Post-treatment						Follow-up					
	Fixed effects				Mixed effects		Fixed effects				Mixed effects	
	Qb	P	Qw	P	Qb	p	Qb	p	Qw	p	Qb	P
Comparison group	94.94	0.00	86.43	0.00	14.74	0.00	–	–	–			
SPSI-R used	43.54	0.00	140.95	0.00	3.55	0.06	–	–	–			
4 PS skills	13.56	0.00	170.61	0.00	3.45	0.06	–	–	–			
Orientation training	29.02	0.00	155.15	0.00	5.60	0.02	–	–	–			
All 5 aspects of PST	25.16	0.00	159.01	0.00	3.99	0.046	4.78	0.03	26.24	0.00	3.62	0.06

Note: Qb = Q between; Qw = Q within (residual); "comparison group" refers to the type of comparison group that was used (medication control, alternate type of therapy control, supportive therapy control, or waitlist control); "SPSI-R used" refers to whether the Social Problem-Solving Inventory Revised: Short Form was used to assess pre and post intervention problem solving skills; "orientation training" refers to whether the problem solving therapy intervention included a problem orientation training component; "all 5 aspects of PST" refers to whether all five aspects of problem solving therapy were included in the problem solving intervention.
"–" = insufficient number of studies to complete analysis.

mean effect size for the group of studies that did not use problem orientation training, $d = -.10$, Q(1, 18) = 5.60, $p < .05$. The second significant result was in favor of using the complete PST package (i.e., training in problem orientation plus all four problem-solving skills). The mean effect size for the studies that used the complete package was significantly larger, $d = .84$, than the mean effect size for the studies that excluded one or more treatment components, $d = -.04$, Q(1, 18) = 3.99, $p < .05$.

In addition, two component analyses achieved borderline significance. The mean effect size for the studies that measured social problem-solving abilities was significantly larger, $d = 1.26$, than the mean effect size for the studies that did not use this measure, $d = .09$, Q(1, 19) = 3.55, $p = .06$. In addition, the mean effect size for the studies that included training in all four problem-solving skills was significantly larger, $d = .66$, than the mean effect size for the studies that did not include training in all four skills, $d = -.02$, Q(1, 18) = 3.45, $p = .06$.

In order to provide readers with some data points that might contextualize the effect sizes described in this paper, we calculated mean pre-treatment and post-treatment BDI scores for participants in PST treatments and for participants in comparison groups. Data from 8 studies were included in our calculations. Six of the 8 studies used the BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and 2 used the BDI-2. The mean pre-treatment BDI score for participants receiving PST was 24.03 (SD = 7.37). The mean pre-treatment BDI score for participants in comparison groups was 23.03 (SD = 7.98). The mean post-treatment BDI score for participants in the PST group was 11.17 (SD = 7.52). The mean post-treatment BDI score for participants in comparison conditions was 14.09 (SD = 8.93). The maximum score for both the BDI and the BDI-II is 63. Cutoff scores for the BDI are as follows: 0–9 is not depressed, 10–18 is mildly to moderately depressed, 19–29 is moderately to severely depressed, and 30–63 is severely depressed. Cutoff scores for the BDI-2 are as follows: 0–13 is minimally depressed, 14–19 is mildly depressed, 20–28 is moderately depressed, 29–63 is severely depressed.

2.2. Follow-up results

The dependent variable was once again found to be heterogeneous Q(10) = 31.02, $p < .01$. An examination of the random effects model revealed an almost medium effect (Cohen, 1988). Based on the 11 samples that were included in the follow-up meta-analysis (total $N = 630$), the standardized mean difference effect size was $d = .48$, $p < .01$. This indicates that participants who received PST had lower depressive symptomatology relative to participants in the comparison groups at follow-up. Two studies provided follow-up data at one month post-treatment, four studies provided follow-up data at three months post-treatment, three provided data at six months, and two provided data at one year. The fail-safe N for the overall follow-up analysis was 67 studies. This indicates that 67 studies with non-significant results would need to be included in the present meta-analysis in order to reduce the results to a non significant

level. Effect sizes ranged from −.19 to 1.98. A complete list of effect sizes appears in Table 1.

Component analyses were conducted in an attempt to explain the heterogeneity among the follow-up effect sizes. We were unable to complete several categorical analyses because there were too few studies per cell resulting from the smaller k of the follow-up time point. Of the analyses that we were able to complete, one was marginally significant. The mean effect size for the group that used the complete PST package was found to be larger, $d = .77$, than the mean effect size for the group that excluded one or more treatment components, $d = .22$, Q(1, 9) = 3.62, $p = .06$. A summary of these results is presented in Table 2.

3. Discussion

The results of the present meta-analysis indicate that PST is an effective intervention for reducing depressive symptomatology. A significant small-to-medium effect was found for the post-treatment time point. Of the included post-treatment samples, 14 had effect sizes indicating that PST was more effective than comparison groups in reducing depression, while only seven samples indicated that PST was less effective. A significant almost medium effect size was found for the follow-up time point. Of the included follow-up samples, nine had positive effect sizes while only two had negative effect sizes. When the type of comparison group was examined specifically, PST was found to be equally effective as alternative psychosocial therapies and medication treatments and significantly more effective than support/attention and waiting-list controls.

As stated in the Method section, our literature search yielded four papers relevant to this meta-analysis that we were unable to include in our statistical analyses because necessary information to compute effect sizes was lacking. However, in all four papers, PST was found to be more effective in reducing depressive symptomatology as compared to a control condition.

Grant et al. (2002) evaluated efficacy of a PST intervention delivered by telephone for family caretakers of stroke survivors. The PST group experienced less depression at post-treatment as compared to a sham intervention group. The authors assessed depressive symptoms with the Epidemiological Studies Depression Scale (Radloff, 1977) and provided regression weights as an estimate of dependent variable change over the 4-week intervention period.

Hussian et al. (1981) evaluated efficacy of a PST intervention for depressed nursing-home patients as compared to a social reinforcement comparison group. The authors provided difference scores for the BDI between baseline and post-treatment and between baseline and follow-up. PST was found to be more effective at both time points.

McInerney-Leo et al. (2004) examined efficacy of PST for depressive symptoms related to genetic testing for hereditary breast and ovarian cancer as compared to client-centered counseling. They reported that PST was more effective than client-centered counseling

regardless of whether a participant opted to pursue genetic testing or not and regardless of the result of testing. The Center for Epidemiological Studies Depression Scale was used.

Sahler et al. (2005) examined efficacy of PST for mothers of children with newly diagnosed cancer as compared to usual psychosocial care. PST significantly lowered scores on the Beck Depression Inventory both at post-treatment and at 3-months follow-up. Mean change scores were provided.

The present results confirm and support the results of earlier meta-analyses on PST for mental health problems (Cuijpers et al., 2007; Malouff et al., 2007). With regard to the previous meta-analysis that focused on depressive symptomatology (Cuijpers et al., 2007), the present study included several additional studies that allowed for a comparison with alternative psychosocial therapies and medication treatments. In addition, this study also provided results on the importance of different components of the PST package. Consistent with the results of the global meta-analysis conducted by Malouff et al., the present results showed that training in a positive problem orientation and the use of the complete PST package (i.e., training in problem orientation plus all four problem-solving skills) both significantly increased efficacy of PST for reducing depressive symptoms. Additionally, the results also suggested that training in all four problem-solving skills also increased treatment effectiveness.

Results of the component analyses support the view that PST for depression should be implemented according to the manual described by D'Zurilla and Nezu (2007), which emphasizes training in a positive problem orientation, as well as training in all four major problem solving skills (i.e., problem definition and formulation, generation of alternative solutions, decision making, and solution implementation and verification). The mean effect size for the group of studies where all five aspects of PST were provided was much larger than the mean effect size for the group of studies where it was not ($d = .84$ and $d = -.04$ respectively). Given the large difference in effect sizes between the group of studies in which participants received problem orientation training and the group that did not ($d = .80$ and $d = -.10$) the problem orientation training component of PST is likely to be of particular importance. Problem orientation training seeks to foster positive problem orientation beliefs and to decrease or correct negative problem orientation beliefs. As discussed in the introduction, a positive problem orientation consists of viewing a problem as a "challenge" or opportunity for benefit, being optimistic about one's ability to solve problems, having a sense of problem-solving self-efficacy, believing that it takes time and effort to solve problems effectively, and being willing to commit time and effort to solving problems rather than avoiding them. A negative problem orientation, on the other hand, consists of viewing a problem as a significant threat to well-being, having poor problem-solving self-efficacy, and having a low tolerance for frustration and uncertainty when confronted with problems in living.

A marginally significant result in this study was in favor of the assessment of social problem-solving abilities. The mean effect size for the group of studies that included a measure social problem-solving abilities was much higher than the mean effect size for the group that did not use such a measure ($d = 1.26$ and $d = .09$, respectively). The pre-treatment assessment of strengths and weaknesses in social problem-solving abilities would have allowed study therapists to tailor the PST intervention to meet the specific needs of individual study participants. This would have likely increased the effectiveness of PST and contributed to the lowering of scores on post-treatment measures of depressive symptomatology. Alternatively, it is possible that the study authors who opted to assess social problem-solving abilities were more likely to include problem orientation training, use all four problem-solving skills, and/or use the complete PST package (problem orientation plus the four problem-solving skills).

As noted in the Results section, we were unable to complete all of the component analyses at the follow-up time point because there were too few studies per cell. (Twenty-one samples were included in the post-treatment analyses, but only 11 samples were included in the follow-up analyses). The only significant finding was that the use of the complete PST package was more effective in reducing depressive symptoms than PST interventions that excluded one or more treatment components. This finding is consistent with the findings from the post-treatment time point and provides further evidence for the importance of including the complete PST package (problem orientation plus the four major problem-solving skills) when conducting PST.

Future research on PST for depressive symptomatology should continue to investigate the importance of including training in problem orientation and all four problem-solving skills in therapeutic interventions. In addition, previous research has suggested that specific components of problem solving ability may be more strongly related to depression than others (see D'Zurilla & Nezu, 2007; Nezu, Wilkins, & Nezu, 2004). For example, some studies have shown that depressed individuals have a more difficult time generating alternative solutions to their problems that their non-depressed peers (Marx, Williams, & Claridge, 1992; Nezu & Ronan, 1987). Other studies have shown that depressed persons have poorer decision making ability as compared to their non-depressed peers (Nezu & Ronan, 1987). Lastly, a number of studies have found that depressive symptom severity is more highly related to negative problem orientation than any other component of social problem-solving ability (Kant, D'Zurilla, & Maydeu-Olivares, 1997). These results suggest that it may be important to tailor PST interventions for depressive symptoms such that certain components of social problem-solving ability are emphasized to meet the specific needs of people with various depressive disorders or symptoms.

In conclusion, results of the present meta-analysis indicate that PST is an effective treatment for depression. Moreover, the results suggest that clinicians and researchers can maximize efficacy of PST by including training in problem orientation as well as the four major problem-solving skills. In addition, the findings suggest that treatment efficacy may be increased by assessing a person's social problem-solving abilities before treatment so that the treatment program can be tailored to focus on the major problem-solving deficits of each patient. In the PST manual recently described by D'Zurilla and Nezu (2007), specific training modules are described that focus on different components or dimensions of social problem-solving ability, which allow clinicians or researchers to design their own PST programs that are tailored to meet the needs of specific patients with specific deficits in social problem-solving ability and performance.

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