

# Social Problem Solving and Adaptation

According to the theory of problem-solving therapy (PST), social problem solving is an important general coping process that increases adaptive situational coping and behavioral competence which, in turn, reduces and prevents the negative effects of stress on psychological-physical well-being. If this assumption is correct, then social problem-solving ability should be related to a wide range of adaptive and maladaptive responses. What follows is a selective review of research on the relationship between problem-solving ability and adaptive functioning and well-being. The purpose of this review is to give the reader an appreciation of the range of adaptive outcomes that are linked to problem-solving ability.

## Experimental Studies

Phillips (1978) has proposed a functional definition of psychopathology, which includes the following components:

1. The organism is unable to solve a problem, reach a goal.
2. The organism persists in attempting to solve the problem.
3. The organism lacks the immediate skills or means with which to solve the problem or reach the goal.
4. The persistent or redundant efforts to reach the goal are not adaptive, resourceful, inventive, or effective.
5. The redundant and maladaptive efforts to reach the goal, bring out, or are associated with, maladaptive and unsuccessful behaviors in other respects, or in other aspects of the organism's repertoire, or in other goal-seeking.
6. The organism is temporarily unable (under the conditions under which the above definitional terms are observed, or are observable), in terms

of the existing repertoire, to make the adaptive shifts needed to solve the problem and therefore requires some means that will increase its adaptability, such as utilizing previously unutilized behaviors, learning new behaviors sufficient to reach the goal, restructuring goal efforts (e.g., redefining or relinquishing the goal), or gaining the aid of a prosthetic environment in order to attain the goal. [pp. 101-102]

This view of psychopathology is based in part on a series of laboratory studies on "experimental neurosis." In one set of studies, laboratory animals were placed in highly aversive problematic situations where the availability of a solution was impossible or highly unlikely (e.g., Maier, 1949; Masserman, 1943; Solomon, 1964; Seligman, 1975; Seligman & Maier, 1967). In such situations, the animals showed a number of "neurotic" or maladaptive responses, including perplexity, loss of control, rigidity, stereotyped behavior, and bizarre or unusual behavior. Similar experimental studies have been done with human subjects. When placed in problematic situations where the ability to predict, control, or prevent an aversive or rewarding outcome is manipulated, subjects have shown a variety of maladaptive responses, including "learned helplessness" (Hiroto & Seligman, 1975), anxiety (Corah & Boffa, 1970; Geer, Davison, & Gatchel, 1970), hypertension (Hokanson, DeGood, Forrest, & Brittain, 1971), and obsessive-compulsive behavior (Marquart & Arnold, 1952; Jones, 1954). Most importantly for our purposes, when predictability, control, or merely the *perception* of control is introduced into the experimental situation, these negative stress effects are ameliorated (Badia, Suter, & Lewis, 1967; Corah & Boffa, 1970; Geer et al., 1970).

The experimental conditions in the above studies can be viewed as analogous to a real-life situation in which a person is confronted with a difficult problem or set of problems but has significant deficits in problem-solving ability, which reduce predictability, mastery, and control, resulting in negative stress effects (psychological symptomatology, maladaptive behavior). The person is then given problem-solving training which enhances predictability, mastery, and control, resulting in an amelioration of the negative stress effects. However, one must use extreme caution in generalizing from the results of these laboratory analogue studies to real-life problem-solving situations. The relevant variables in the two settings are too different to permit any definite conclusions regarding the effects of social problem solving on psychopathology. Nevertheless, these studies do at least strengthen the hypothesis that maladaptive behavior might be linked to social problem-solving deficits, and that problem-solving training might significantly reduce maladaptive behavior in individuals who have such deficits.

In a recent experimental study, which more closely approximates a real-life problem-solving situation, Davey, Jubb, and Cameron (1996) examined the effects of one problem orientation variable, namely, problem-solving self-efficacy, on self-reported anxiety and catastrophic worrying. College students were randomly assigned to a high problem-solving confidence condition or a low problem-solving confidence condition. All subjects were asked to provide solutions to a series of real-life hypothetical problems. The subjects in the high problem-solving confidence condition were informed that their solutions were very good, whereas those in the low problem-solving confidence condition were given feedback that suggested that their solutions were very poor. The results showed that the subjects who experienced the manipulation designed to lower their problem-solving confidence subsequently reported more anxiety and catastrophic worrying than subjects who experienced the procedure designed to increase their problem-solving confidence.

### Correlational Studies

The relationship between social problem solving and adaptation in the natural environment has also been investigated in a number of correlational studies. The adaptational criteria in these studies have included measures of situational coping, behavioral competence, positive psychological well-being, psychological distress and symptomatology, and health-related behaviors, symptoms, and adjustment. Although a variety of different subject populations are included in these studies, college students are most common. Therefore, we will specify the subject population only when it is not college students. For a more complete description of the social problem-solving measures used in these studies, the reader is referred to Chapter 4.

### Situational Coping and Behavioral Competence

In the studies cited below, situational coping was assessed by instruments such as the Ways of Coping Checklist (Lazarus & Folkman, 1984) and the Coping Strategies Inventory (Tobin, Holroyd, Reynolds, & Wigal, 1989). In this approach, subjects are asked to describe a recent stressful situation or event and then to report on a checklist what specific coping activities they used. Scores reflect the frequency of different types of coping activities within the general categories of problem engagement

(confronting problems), emotion engagement (confronting emotions), problem disengagement (avoiding problems), emotion disengagement (avoiding/denying emotions), problem-focused coping, and emotion-focused coping. In general, engagement and problem-focused coping activities are considered to be more adaptive than disengagement and emotion-focused activities (Bandura, 1997; Lazarus & Folkman, 1984; Tobin et al., 1989).

Using the total score of the PSI, Larson et al. (1990) found that greater problem-solving ability was associated with the use of more problem-engagement coping and less disengagement coping. In a prospective study that analyzed data on the individual PSI scales, MacNair and Elliott (1992) reported that positive problem orientation and problem-solving skills measured by the Problem-Solving Confidence and Approach-Avoidance Style scales, respectively, predicted the use of problem-focused coping, whereas negative problem orientation (the Personal Control scale) was related to the use of emotion-focused coping. In another prospective study using the SPSI-R, D'Zurilla and Chang (1995) reported that positive problem orientation and rational problem solving (use of effective problem-solving skills) predicted the use of problem-engagement coping, whereas negative problem orientation, impulsivity/carelessness style, and avoidance style were related to the use of disengagement coping. In a partial replication of this study using only the problem orientation scales of the SPSI-R, Chang and D'Zurilla (1996a) found that positive problem orientation predicted active problem-engagement coping even after controlling for optimism and positive trait affectivity. Finally, in a study using the PMPI, Burns and D'Zurilla (in press) found that individuals who reported more rational processing (which includes the use of effective problem-solving skills) in stressful situations also reported more problem-engagement coping.

In addition to facilitating adaptive situational coping, effective social problem solving is expected to increase competent performance in general, including social performance, academic performance, and job performance. Using the Problem-Solving Confidence and Approach-Avoidance Style scales of the PSI to measure problem orientation and problem-solving skills, respectively, Elliott, Godshall, Herrick, Witty, and Spruell (1991) found that these two constructive problem-solving dimensions were both related to a greater likelihood of assertive behavior in patients with spinal cord injuries. Burns and D'Zurilla (1994; reported in D'Zurilla, Nezu, et al., in press) studied the relationship between interpersonal problem-solving ability and social competence using a modified version of the SPSI-R in which the instructions asked subjects to focus only on *interpersonal* problems. They found that positive problem

orientation was positively related to self-report measures of social adjustment and extraversion and peer ratings of interpersonal competence, whereas negative problem orientation was negatively correlated with all three of these measures. In addition, rational problem solving was found to be positively related to social adjustment and interpersonal competence, whereas impulsivity/careless style was negatively related to both of these measures and avoidance style was negatively related to social adjustment and extraversion. In a study using the SPSI-R that focused on junior and senior high school students, Sadowski et al. (1994) found that positive problem orientation and rational problem solving were both positively related to a measure of social skills, whereas negative problem orientation, impulsivity/carelessness style, and avoidance style were negatively related to these skills.

Using the total PSI, Elliott, Godshall, Shrouf, and Witty (1990) found that problem-solving ability was related to the use of more adaptive study habits and attitudes in college students enrolled in a developmental course for academically unprepared students. Moreover, they found that problem-solving ability also predicted the students' semester grade point average. In a study using the SPSI, D'Zurilla and Nezu (1990) found that problem orientation and problem-solving skills both predicted semester grade point average in college students. In another study, D'Zurilla and Sheedy (1991) found that only problem-solving skills predicted the academic year grade point average after controlling for the level of academic aptitude. These data were later re-analyzed by D'Zurilla, Nezu, et al. (in press) using SPSI-R scores obtained from the original SPSI item scores. The results suggested that the significant relationship between problem-solving skills and grade point average found in the above two studies can be accounted for by an impulsive/careless problem-solving style.

In the occupational area, Sternberg et al. (1995) described a number of studies that found that job-relevant problem-solving performance tests were better predictors of job performance than traditional intelligence (IQ) tests and other measures of traditional cognitive abilities. These studies suggest that social problem-solving ability may be more important for job success than traditional intellectual abilities.

In addition to the above measures of competence, there is also some evidence that suggests that social problem-solving ability might be related to parenting and caregiving effectiveness. In one study, Azar, Robinson, Hekimian, and Twentyman (1984) found that a group of abusive and/or neglectful mothers showed significantly poorer problem-solving skills on a parental problem-solving performance test than did matched non-abusive mothers. In a recent study focusing on family caregivers of

persons with recent-onset physical disability, Elliott, Shewchuk, and Richards (1998) reported that an impulsive/careless problem-solving style in the caregiver, measured by the SPSI-R, predicted less acceptance of disability in the disabled family member at discharge from a rehabilitation program, as well as pressure sore diagnosis after 1 year.

### Positive Psychological Well-Being

Social problem solving is expected to have both a direct and an indirect link to positive psychological well-being. The direct link is that problem orientation overlaps with positive psychological (cognitive and emotional) constructs such as perceived control, optimism, and positive affectivity. The indirect link is that effective social problem solving facilitates adaptive coping and general competence which, in turn, are likely to enhance positive psychological conditions, including positive affectivity, perceived control, self-esteem, and life satisfaction. Positive well-being is an important correlate of social problem solving because it acts as a buffer against the negative effects of stress and can attenuate or prevent symptoms of psychopathology.

Using the Problem-Solving Confidence scale of the PSI to measure positive problem orientation, Elliott and his associates have found that a positive problem orientation is related to more positive mood states in routine and stressful situations as well as more positive trait affectivity (Elliott, Herrick, MacNair, & Harkins, 1994; Elliott et al., 1994). In a study using the SPSI-R, Chang and D'Zurilla (1996a) reported that positive problem orientation is related to positive trait affectivity and optimism. Other studies using the SPSI and the SPSI-R have also found that positive problem orientation is related to an internal locus of control (D'Zurilla & Nezu, 1990; D'Zurilla, Nezu, et al., in press). In another study, positive problem orientation and problem-solving skills measured by the PSI were both found to be related to an internal locus of control (Heppner & Petersen, 1982). Using the total PSI score, Heppner, Reeder, and Larson (1983) found that social problem-solving ability is also related to self-esteem. In addition to these findings, positive problem orientation and rational problem solving measured by the SPSI-R have both been found to be related to self-esteem and life satisfaction (D'Zurilla, Nezu, et al., in press). Consistent with these results, rational processing measured by the PMPI has also been found to be related to self-esteem and life satisfaction (Burns & D'Zurilla, in press).

### Psychological Distress and Symptomatology

Based on numerous studies using different measures of social problem solving, a strong link has been established between problem-solving deficits and general psychological distress and symptomatology. These studies cover a wide range of criterion measures, including negative emotional states, negative trait affectivity, psychological stress, general severity of psychological symptoms, general maladjustment, depression, anxiety, worry, hopelessness, suicidal ideation and behavior, occupational burnout, and a diagnosis of severe psychopathology (e.g., schizophrenia, bipolar disorder). The subject populations have included college students, high school students, middle-aged and elderly community residents, psychiatric inpatients, medical patients, and caregivers of medical patients.

In a study using the individual PSI scales, Elliott and his associates found that a negative problem orientation is associated with more negative emotions in routine and stressful situations as well as more negative trait affectivity (Elliott et al., 1994; Elliott et al., 1995). Using the SPSI-R, Chang and D'Zurilla (1996a) reported that a negative problem orientation is related to negative trait affectivity and pessimism. In a prospective study using the SPSI, D'Zurilla and Sheedy (1991) found that a negative problem orientation predicted later psychological stress in college students even after controlling for prior levels of psychological stress and self-reported frequency of daily problems. In a study focusing on nurses working in physical rehabilitation units, Elliott, Schewchuk, Hagglund, Rybarczyk, and Harkins (1996) reported that a negative problem orientation was associated with more occupational burnout.

In studies using the total PSI score, problem-solving ability has been found to be negatively related to general psychological symptom severity or maladjustment (Heppner & Anderson, 1985; Heppner, Kampa, & Brunning, 1987). In studies using the SPSI and SPSI-R, negative problem orientation, but not problem-solving skills, has been found to be related to symptom severity in college students (Chang & D'Zurilla, 1996a; D'Zurilla & Nezu, 1990; D'Zurilla, Nezu, et al., in press). Similarly, using the SPSI-A, Frauenknecht and Black (1995) reported that only negative problem orientation was related to symptom severity in high school students. However, using the SPSI in a sample of high-stressed, middle-aged community residents, D'Zurilla and Nezu (1990) found that both negative problem orientation and problem-solving skills deficits were related to symptom severity. Moreover, in a study focusing on caregivers

of people with Alzheimer's disease, Rothenberg, Nezu, and Nezu (1995) reported that all three dysfunctional problem-solving dimensions measured by the SPSI-R (negative problem orientation, impulsivity/carelessness style, and avoidance style) were positively related to symptom severity, whereas the two constructive dimensions (positive problem orientation and rational problem solving) were negatively related to this criterion measure.

Because significant correlations have been found between negative problem orientation and both pessimism and negative trait affectivity (Chang & D'Zurilla, 1996a; Elliott et al., 1994; Elliott et al., 1995), a question can be raised about whether the latter cognitive and emotional constructs might account for the significant relations between negative problem orientation and general symptom severity reported in the above studies. This hypothesis was rejected by Chang and D'Zurilla (1996a), who reported that negative problem orientation was significantly related to symptom severity even after controlling for pessimism and negative trait affectivity. Hence, it can be concluded that negative problem orientation contributes significant incremental validity to the prediction of general symptom severity above and beyond the contributions of pessimism and negative trait affectivity.

With regard to more specific symptomatology, a large body of research has established a strong link between problem-solving deficits and depression. In a number of these studies, problem-solving deficits were found to be associated with anxiety as well. Nezu and Ronan (1987) compared the performance of depressed and nondepressed college students on a task designed to assess the skill of generating alternative solutions. The results showed that the depressed students produced fewer and less effective solutions to hypothetical interpersonal problems than the nondepressed students. When the subjects were provided with training in the generation of alternative solutions, task performance improved in both groups. In a second related study, Nezu and Ronan (1987) found similar results using a process performance test designed to assess decision-making ability. Specifically, when given a list of alternative solutions to hypothetical interpersonal problems, depressed subjects chose less effective solutions than the nondepressed subjects. Most importantly, subsequent training in decision making was found to improve performance in both groups. The process performance tests used in these two studies were developed and validated in two previous studies (Nezu & D'Zurilla, 1979, 1981b).

Using the MEPS to assess problem-solving performance, Gotlib and Asarnow (1979) compared depressed and nondepressed college students enrolled in introductory courses, as well as depressed and nondepressed

students in treatment for depression at the university counseling center. In both cases, the depressed group was found to have lower MEPS scores (number of relevant means) than the nondepressed group. Marx and Schulze (1991) compared depressed and nondepressed college students on a problem-solving performance test consisting of interpersonal problems that were found to be relevant and important for students. They also obtained ratings from students to assess situational problem orientation variables. The results showed that the depressed group reported less effective solutions and a more negative problem orientation than the nondepressed group.

In several studies, the total PSI score was used to classify college students as "effective problem solvers" and "ineffective problem solvers" and then these two groups were compared on different measures of psychological distress, including depression and anxiety. These studies consistently found that effective problem solvers report less depression and anxiety than ineffective problem solvers (Heppner & Anderson, 1985; Heppner, Baumgardner, & Jackson, 1985; Heppner et al., 1987; Nezu, 1985). Because these studies focus exclusively on college students or subclinical populations, Nezu (1986c) conducted an additional study using the PSI that involved clinically depressed subjects. Compared to nondepressed subjects who were matched on relevant demographic variables, the clinically depressed group showed more problem-solving deficits.

Using a modified version of the MEPS, Marx et al. (1992) examined differences between a clinically depressed group, a clinical group consisting of patients with anxiety disorders, and a nonclinical control group. The subjects also completed a questionnaire designed to assess problem orientation. The results showed that the two clinical groups had lower quantitative MEPS scores (number of relevant means) and a more negative problem orientation than the nonclinical control group but the two clinical groups did not differ from each other on these measures. However, when qualitative MEPS scores (solution effectiveness ratings) were analyzed, the clinically depressed group was found to perform less effectively than both the anxiety group and the nonclinical control group.

The SPSI and SPSI-R have also been used to study the relationship between social problem-solving ability and depression in college students, adolescents, and psychiatric patients. One study using the SPSI found that problem orientation but not problem-solving skills was related to depressive symptoms in college students (Haaga, Fine, Roscow Terrill, Stewart, & Beck, 1995). In a study using the SPSI-R, all problem-solving dimensions except rational problem solving were found to be related

in the expected directions to depression in a sample of college students and a sample of general psychiatric inpatients (D'Zurilla, Chang, Nottingham, & Faccini, 1998). Similarly, Sadowski et al. (1994) reported that the same problem-solving dimensions were related to depression in high school students. In addition, these investigators also found that positive problem orientation, negative problem orientation, and impulsivity/carelessness style distinguished between emotionally disturbed adolescent inpatients and normal adolescents.

A number of other studies have examined the relations between social problem solving and depression, anxiety, and stress in medical patients and their caregivers. Three of these studies used the Problem-Solving Confidence and Personal Control scales of the PSI as measures of problem orientation. In one study, a link was found between negative problem orientation and depression during pregnancy and in the postpartum period (Elliott, Shewchuk, Richeson, Pickelman, & Franklin, 1996). In another study, a negative problem orientation was found to be related to depression in patients with spinal cord injuries (Elliott et al., 1991). The third study found that a negative problem orientation was related to depression and anxiety in caregivers of persons with spinal cord injuries (Elliott, Shewchuk, Richards, Palmatier, & Margolis, 1997). Two studies by Nezu and his associates used the SPSI-R to measure social problem-solving ability. In one study focusing on cancer patients, all five problem-solving dimensions were found to be related in the expected directions to depression, anxiety, and the number of cancer-related problems (Nezu, Nezu, Friedman, Houts, DelliCarpini, Nemeth, & Faddis, in press). In the second study, all five problem-solving dimensions were found to be related in the expected directions to depression in caregivers of Alzheimer's patients (Rothenberg et al., 1995).

Several studies have provided evidence for the role of social problem-solving ability as a moderator or buffer of the negative effects of major stressful life events on depression and anxiety (Nezu, 1986b; Nezu et al., 1986; Nezu, Perri, Nezu, & Mahoney, 1987; Nezu et al., 1995; Nezu & Ronan, 1988). Other studies have found support for the role of social problem solving as a mediator of the relationship between daily problems and depression and anxiety (Kant et al., 1997; Nezu & Ronan, 1985). These studies were described in Chapter 6.

In addition to several of the studies reported above, a number of other studies have examined the relationship between social problem-solving ability and anxiety. In a recent study, Bond (1998) employed a factorial analysis of variance design which had two problem-solving factors (effective and ineffective problem solvers) and three exercise factors (moderate aerobic exercise, mindful Tai Chi, and sedentary activity).

The dependent measures were state and trait anxiety and the frequency and severity of daily hassles. The assignment of subjects to the two problem-solving groups was based on an overall unweighted problem-solving index derived from the SPSI-R. The subjects included both males and females ranging in age from 19 to 69 years. The results showed that the effective problem solvers reported less anxiety and fewer hassles than the ineffective problem solvers. In addition, the aerobic and Tai Chi groups reported less anxiety and hassles than the sedentary group. Interestingly, however, the exercise effects were found to vary depending on the age and/or gender of the subjects, whereas the problem-solving effects were independent of age and gender on all measures. These results suggest that social problem solving is an effective stress- and anxiety-management strategy for both men and women across a wide age range.

In other studies, all five problem-solving dimensions measured by the SPSI-R have been found to be related in the expected directions to state and/or trait anxiety in college students (Belzer, D'Zurilla, & Maydeu-Olivares, 1998a; D'Zurilla, Nezu, et al., in press) and in middle-aged community residents (Kant et al., 1997). In addition, Kant et al. (1997) found that all SPSI-R dimensions except rational problem solving were related to trait anxiety in elderly community residents.

Belzer, D'Zurilla, and Maydeu-Olivares (1998b) found support for a mediational model which indicates that negative problem orientation has both a direct and an indirect effect on trait anxiety. The indirect effect is that negative problem orientation increases worrying which, in turn, increases anxiety. A number of other studies using the PSI scales, the Problem-Solving Self-Efficacy scale of the modified PSI, the SPSI, or the SPSI-R have consistently reported that a negative problem orientation is related to the frequency of worrying as well as catastrophic worrying (Belzer et al., 1998a; Davey, 1994; Davey, Hampton, Farrell, & Davidson, 1992; Dugas, Freeston, & Ladouceur, 1997; Dugas, Letarte, Rhéaume, Freeston, & Ladouceur, 1995). In the one study that used the SPSI-R, Belzer et al. (1998a) found that impulsivity/carelessness style and avoidance style are also related to the frequency of worrying and catastrophic worrying.

Nezu and Carnevale (1987) examined the relation between social problem-solving ability, measured by the PSI, and posttraumatic stress disorder (PTSD), which is considered to be one type of anxiety disorder. Four groups of Vietnam veterans participated in this study: (1) combat veterans diagnosed with PTSD, (2) combat veterans with severe adjustment problems (AP) who did not meet the criteria for PTSD, (3) combat veterans who were well-adjusted, and (4) veterans with little or no combat

experience. Results of multivariate analyses indicated that both the PTSD and the AP groups had lower problem-solving ability than the two control groups. Moreover, the PTSD group was found to have lower problem-solving ability than the AP group, which suggests that problem-solving deficits might contribute specifically to PTSD.

Brodbeck and Michelson (1987) evaluated the relation between social problem solving and another anxiety disorder—agoraphobia. In this study, a group of female subjects with a primary diagnosis of agoraphobia with panic attacks was compared with normal controls on the Interpersonal Problem-Solving Technique (Getter & Nowinski, 1981; see Chapter 4 for a further description of this test). The results showed that the agoraphobic groups was significantly deficient compared to the normal controls on measures of the ability to generate alternative solutions and the ability to choose effective solutions for 24 hypothetical interpersonal problems.

A link has also been established between social problem-solving ability and hopelessness and suicidality. Using the MEPS, Schotte and Clum (1982) found that the combination of high stress and poor problem-solving ability predicted hopelessness and suicidal intent in a sample of college students with suicidal ideation. In another study, Schotte and Clum (1987) compared suicidal psychiatric patients with nonsuicidal patients on a modified version of the MEPS. They found that the suicidal patients generated less alternative solutions to problems and reported more potential negative consequences than did the nonsuicidal group. In another study with suicidal psychiatric inpatients, Linehan et al. (1987) scored the MEPS for active versus passive relevant means. They found that psychiatric inpatients admitted following a parasuicide (i.e., deliberate, self-inflicted injury) generated less active relevant means than those admitted for suicidal ideation without parasuicide.

Using the total score of the PSI, Bonner and Rich (1988) found that problem-solving ability was related to hopelessness in college students even after controlling for depression. They also found that problem-solving ability moderated the impact of major negative life events on hopelessness. Dixon, Heppner, and Anderson (1991) found that positive problem orientation, measured by the Problem-Solving Confidence scale of the PSI, was negatively related to both hopelessness and suicidal ideation in college students. In another study using the PSI in a sample of young adults in an outpatient program targeting suicidal behavior and/or ideation, Dixon, Heppner, and Rudd (1994) found support for a mediational model in which problem-solving deficits increase hopelessness which, in turn, increases suicidal ideation. Using the SPSI-R, D'Zurilla et al. (1998) reported that positive and negative problem orien-

tation were most strongly related to hopelessness and suicidal ideation in college students and general psychiatric inpatients, whereas all five problem-solving dimensions were highly correlated with both of these variables in suicidal inpatients. In another study using the SPSI-R, Chang (1998) found that social problem-solving ability predicted suicidal probability in college students even after controlling for ethnic status (Caucasian vs. Asian) and maladaptive perfectionism.

In a study using the SPSI, Sadowski and Kelly (1993) compared adolescent suicide attempters with psychiatric and normal controls. They found that the suicide attempters had lower problem-solving ability than both psychiatric and normal controls. Moreover, psychiatric controls had lower problem-solving ability than normal controls. More specific analyses indicated that negative problem orientation was primarily responsible for the difference between the suicide attempters and the psychiatric controls. Both clinical groups were found to have poorer problem-solving skills than the normal controls, but they did not differ from each other on this measure.

Several additional studies have examined the relationship between social problem-solving deficits and severe psychopathology by comparing different samples of psychiatric inpatients to matched normal controls. Using the MEPS, Platt, Spivack, and their associates have found deficits in problem-solving performance in adolescent psychiatric patients (Platt, Spivack, Altman, Altman, & Peizer, 1974) and adult psychiatric patients (Platt & Spivack, 1972a, 1973). In addition to these studies, two studies related MEPS performance to the level of social competence *within* patient groups. In one study, lower MEPS performance was found to be associated with a lower level of premorbid social competence in adult psychiatric patients (Platt & Spivack, 1972b). In the second study, male psychiatric patients who obtained low scores on the MEPS were found to have MMPI profiles that were more clearly psychotic than those of patients who had high MEPS scores (Platt & Siegel, 1976).

Using a social problem-solving assessment test battery, Bellack, Sayers, Mueser, and Bennett (1994) compared the problem-solving performance of schizophrenic inpatients, a sample of inpatients with bipolar disorder, and matched nonpatient controls. The test battery was designed to assess the ability to generate solutions to problems, the ability to evaluate the effectiveness of solutions, and the ability to implement solutions in a role-play format. Substantial deficits were found on all three tests in the two patient groups compared to the nonpatient controls, but no significant differences were found between the two patient groups. The authors concluded that problem-solving deficits are general in severe psychopathology and are not unique to schizophrenia.

### Health-Related Behaviors, Symptoms, and Adjustment

Research in this area has found a link between social problem-solving ability and substance use and abuse. In a study using the PSI, Williams and Kleinfelter (1989) found that college students with a lower positive problem orientation (specifically, lower Problem-Solving Confidence scores) reported a greater use of alcohol to cope with negative emotions and escape from responsibilities. In another study, Godshall and Elliott (1997) found that less effective problem-solving skills were associated with greater daily alcohol consumption over a 2-week period in college students. Elliott, Johnson, and Jackson (1997) found that a less positive problem orientation and a more negative problem orientation were also associated with more substance risk taking (e.g., "I drive after drinking") among male college students. In studies using the MEPS, deficits in problem-solving performance have been found in adult alcoholics (Nixon, Tivis, & Parsons, 1992) and in heroin addicts (Platt, Scura, & Hannon, 1973), as compared to matched controls. In another study, Appel and Kaestner (1979) found less effective MEPS performance in a group of narcotic drug abusers judged to be in "poor" standing in an outpatient rehabilitation program compared to a group judged to be in "good" standing.

In addition to the research on substance use, several other studies have focused on different health problems and health-related behaviors. In two studies using the PSI, college students identified as ineffective problem solvers were found to report more health problems and physical symptoms than effective problem solvers (Elliott & Marmarosh, 1994; Tracey, Sherry, & Keitel, 1986). In another study using the PSI, Godshall and Elliott (1997) found that a negative problem orientation was associated with negative perceptions of health in college students. In addition, these investigators also found that less effective problem-solving skills were related to more sedentary leisure activities. Using the SPSI-R, Elliott et al. (1997) found that a positive problem orientation was associated with more accident prevention in college students, while an avoidant problem-solving style was related to more traffic risk taking. In addition, these investigators also found that rational problem solving (use of effective problem-solving skills) was related to more accident prevention in men, whereas the same measure was related to more wellness behavior in women. In addition to these findings, adherence to required dietary regimens has also been found to be related to problem-solving skills in adolescents (Hanna, Ewart, & Kwiterovich, 1990), and adults (Fehrenbach & Peterson, 1989; Glasgow, Toobert, Riddle, Donnelly, & Calder, 1989).

Finally, two recent studies have focused on complications and adjustment in people with physical disabilities. In one study using the PSI, Herrick, Elliott, and Crow (1994) found that less effective problem-solving skills were associated with a greater incidence of pressure sores and urinary tract infections among persons with spinal cord injuries. In the second study which used the SPSI-R, Elliott (1998) found that problem orientation (positive and negative problem orientation) and problem-solving skills (rational problem solving, impulsivity/carelessness style, and avoidance style) each contributed to the prediction of self-reported adjustment after discharge from a medical rehabilitation program for recent-onset physical disability, even after controlling for the level of depressive behavior at admission. More specific analyses indicated that positive problem orientation and rational problem solving were both associated with greater acceptance of disability, whereas negative problem orientation and impulsive-careless problem solving were both associated with less acceptance of disability.

### Summary and Conclusions

The major assumption underlying problem-solving therapy (PST) is that social problem solving is an important general coping strategy that increases adaptive situational coping and behavioral competence which, in turn, reduces or prevents the negative effects of daily stress on psychological-physical well-being. If this assumption is correct, then social problem-solving ability should be related to a wide range of adaptive and maladaptive responses. Numerous experimental and correlational studies were reported which provide support of this view.

Caution is needed when interpreting the results of the experimental studies because the differences in relevant variables between laboratory and real-life problem-solving situations are too great to permit any definite conclusions regarding the effects of social problem solving on psychopathology. However, the results of these studies at least strengthen the hypothesis that problem-solving deficits contribute to maladaptive behavior. Caution is also needed when interpreting the results of the cross-sectional correlational studies, especially those that focus on psychological distress and symptomatology as criterion measures. One possible interpretation of these findings is that they support our hypothesis that problem-solving deficits cause or contribute to psychopathology. However, an alternative possibility which cannot be ruled out is that psychopathology from other causes might have a negative effect on



problem-solving ability and performance (Mitchell & Madigan, 1984; Schotte, Cools, & Payvar, 1990; see also Chapter 4). In addition, a third possible interpretation is that a reciprocal relationship exists between social problem-solving ability and psychopathology (Bandura, 1977; Mitchell & Madigan, 1984). In a reciprocal causation model, problem-solving deficits result in psychological distress and other maladaptive responses which, in turn, cause more deficits in problem-solving ability and performance. In addition, psychological distress and symptoms from other causes may also contribute to the deficits in problem-solving ability. Regardless of the direction of the relationship between problem-solving deficits and psychopathology, PST is likely to be a useful treatment method because it can increase adaptive functioning which, in turn, should improve the person's psychological condition.

Compared to the cross-sectional correlational studies, stronger support for our hypothesized causal relationship between problem-solving deficits and psychopathology comes from the correlational studies that used prospective designs, where prior levels of psychological distress and symptomatology are controlled when predicting subsequent distress and symptoms. These studies reduce the possibility that the dependent variable (distress and symptoms) is influencing the predictor variable (problem-solving ability) instead of the other way around. In addition to these studies, strong evidence for a causal relationship between social problem-solving ability and depression is also provided by the studies that demonstrated that training in problem-solving skills resulted in a reduction in depressive symptoms. Additional evidence for the effects of problem-solving training on psychopathology will be presented in Chapter 10, which reviews outcome studies on the efficacy of PST for a variety of different psychological and behavioral problems.

Four apparent trends in the data presented in this chapter are noteworthy. First, social problem-solving deficits appear to be general in psychopathology; there is no strong evidence that deficits in social problem-solving ability are specific to any particular form of maladaptive behavior or psychological disorder. The second notable trend is that problem orientation, especially negative orientation, seems to be most strongly and consistently related to cognitive-emotional outcomes (e.g., emotional states, psychological symptoms, worrying), whereas problem-solving skills appear to be most strongly and consistently related to behavioral measures or outcomes that result from instrumental activities (e.g., active problem-focused coping, behavioral competence). The third apparent trend is that deficits in problem-solving skills (vs. problem orientation) seem to become progressively more important for adaptation in populations experiencing more frequent and/or severe life stress

and daily problems. Finally, the fourth notable trend is that the two constructive problem-solving dimensions (positive problem orientation and effective problem-solving skills) tend to produce *positive* adaptational outcomes (e.g., adaptive coping, social competence, positive health behaviors, optimism, self-esteem, life satisfaction), whereas the three dysfunctional dimensions (negative problem orientation, impulsive/careless problem solving, and problem-solving avoidance) are more likely to produce *negative* outcomes (e.g., maladaptive coping, psychological symptoms, health-compromising behavior). All four of these patterns are consistent with expectations based on social problem-solving theory. Hence, it can be concluded that the empirical results reported in this chapter provide strong support for the theory on which PST is based.