

PART I

EVIDENCE

Chapter 1

SOCIAL PROBLEM SOLVING: BASIC CONCEPTS, RESEARCH, AND APPLICATIONS

JAMES MCGUIRE

University of Liverpool, UK

INTRODUCTION

The phrase “problem solving” has several levels of meaning in mental health and related fields. There is, first, a general sense in which it can be used metaphorically to describe any planned therapeutic effort. Given its function of alleviating distress, therapy by its very nature can be envisioned as helping to solve a problem. There is also a second, more focused, use of the term which arises in psychotherapy and counselling process research, in which problem solving is used to specify certain actions by counsellors or therapists during clinical sessions.

The sense in which it will be used in the present book is distinct from both of the foregoing definitions. In what follows, we will be considering a specific approach, method, or set of procedures within cognitive-behavioural therapy, which has evolved over the past 30 years and is now particularly influential in shaping the design of intervention programmes in a number of inter-related fields.

This opening chapter has three objectives. The first is to describe the origins of the concepts and theoretical underpinnings of a cluster of methods collectively known as social or interpersonal problem-solving training. The second is to provide a brief outline of these methods and an account of the empirical justification for their use. Other chapters will expand considerably upon this and will give illustrations of it in a range of settings. The third objective is to review ways in which the models and methods developed on this basis have

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been used in the design of intervention programmes, and applied in criminal justice and mental health settings.

There is, of course, another separate though overlapping use of the term “problem solving”. This occurs primarily within cognitive psychology where it is employed mainly to designate processes that are involved in solving abstract or impersonal problems, connected with the manipulation of objects or ideas in fields such as logic, mathematics, or science. A large volume of research has been conducted on mental operations such as induction, deduction, syllogistic and analogical reasoning, and creativity (Eysenck, 2001). While studies of this type were traditionally performed in laboratory settings, cognitive psychologists have also extended their research to investigate the processes that underpin everyday reasoning (see, for example, Galotti, 1994). The subject matter nevertheless remains primarily the application of mental effort to the solution of problems in the impersonal, material, or abstract ideational world.

DEFINITIONS AND BASIC CONCEPTS

In the sense that will concern us here, problem solving has been defined as “the self-directed cognitive-behavioral process by which a person attempts to identify or discover effective or adaptive solutions for specific problems encountered in everyday living” (D’Zurilla & Nezu, 2001, p. 212). Alternatively it may be conceptualised as “a goal-directed sequence of cognitive and affective operations as well as behavioral responses for the purpose of adapting to internal or external demands or challenges” (Heppner & Krauskopf, 1987, p. 375). In this respect the terms *problem solving* and *coping* have sometimes been viewed as synonymous (Heppner & Hillerbrand, 1991). Engaging in this process inevitably activates some of the routines involved in other types of reasoning and typically studied in cognitive psychology research. It has been widely recognised, however, that there are additional activities involved in attempting to solve problems in the interpersonal domain. While practical, mechanical problem solving is an intrinsic part of healthy adjustment and everyday functioning, it may be insufficient for adaptive behaviour in complex social environments. Another way to characterise this difference is in terms of a distinction between the “well-structured” tasks that are customarily used in cognitive psychology experiments, versus the more “ill-structured” problems encountered in daily life (ibid.) In these contexts, therefore, other procedures are called into play.

Problem solving self-evidently links two elements: the problem with which the individual begins and which leads to engaging in the exercise; and the solution which presumably is an objective or desired outcome of that effort. It is important therefore to clarify what we mean by these terms. D’Zurilla and Nezu have described a *problem* as “any life situation or task (present or anticipated) that demands a response for adaptive functioning, but for which no effective response is immediately apparent or available to the person, due to the presence of some obstacle(s)” (2001, pp. 212–213). A *solution* is “a situation-specific coping response or response pattern (cognitive and/or behavioral) which is the product or outcome of the problem-solving process when it is applied to a specific

problematic situation" (ibid., p. 213). Put at its simplest, problem-solving training or therapy is designed to help individuals find their way from problems to solutions, using a systematised sequence of methods and steps. Perhaps more importantly, it is also designed to enable them to acquire the capacity to repeat this when necessary on subsequent occasions.

Within cognitive social learning theory, effective problem solving is regarded as a *skill*. To be more precise, it is made possible through the acquisition or development of some constituent types of skill. While this concept is firmly established in the behavioural domain, skilled activity at a cognitive level is more difficult to define. Skills are generally conceptualised as over-learned, automatic sequences of behaviour, which can be controlled and directed towards achievement of a goal. On a behavioural level, this includes motor skills (driving, speed-typing, playing tennis or the piano). On a cognitive level, skilled sequences of activity underpin many kinds of frequently recurring thought processes, as well as language and speech production. In the cognitive-interpersonal domain, individuals deploy skills in activities that range from communication, interaction, or building and maintaining relationships, to negotiation and resolving conflicts.

Origins of Research on Social Problem-Solving

A key question that arises is whether, like their counterparts on the behavioural level, skills for solving problems in the cognitive-interpersonal domain can be learned through conscious effort and repeated practice. The origins of this form of intervention are generally traced to two main approaches or traditions. While in practical terms they are very close and exhibit numerous similarities, there are also some important differences between them, primarily in terms of their conceptual and research origins.

In the first approach, formulated by D'Zurilla and Goldfried (1971), and later refined by D'Zurilla and Nezu (1982), problem-solving concepts were articulated as an extension of principles of behaviour modification. These authors specified a number of mediational stages in the process of behaviour change. Their proposals were initially made during the late 1960s, a period of rapid evolution in behaviourism when the importance of mediating events was beginning to be more broadly recognised. This was associated, among other changes, with the formal statement of cognitive social learning theory by Bandura (1977) and the emergence of the first integrated models of behavioural and cognitive therapies (Mahoney, 1974; Meichenbaum, 1977). A specific impetus for the advent of problem-solving concepts arose from the failure, in many studies of behaviour modification, to demonstrate adequate generalisation of intervention effects. In social skills training, for example, transfer and generalisation of acquired skills are facilitated by the inclusion of training elements focused on perceptual and cognitive aspects of social encounters (Akhtar & Bradley, 1991).

The second approach was derived from work in applied settings but from the outset had a strong developmental emphasis. Spivack and Levine (1963) discovered differences between normally adjusted and social-problem groups in

the way they thought about problems. A group of adolescent boys resident in a reform school was compared with a “normal” control group on a large number of measures of various aspects of self-regulation. The latter were assessed by means of a series of specially designed tasks that called upon processes hypothesised to be necessary for the effective solution of problems in the interpersonal domain. Among them was one task in which participants were given the beginning and the end of a story and asked to make up a central, connecting section. A highly significant difference was found between the two populations both in the length and the quality of the stories they invented. The idea that impoverished “means–end thinking”, as this skill was designated, might characterise the poorly-adjusted adolescent led to the broader notion that an individual’s performance on measures such as this might have implications for other areas of his or her functioning.

In the model that emerged from this (Spivack, Platt, & Shure, 1976), it was hypothesised that some problems could result from the absence of, or failure to apply, certain cognitive-interpersonal abilities. Such problem-solving “deficits” might include repeated rigidity when a situation demanded flexibility of response; acting impulsively without considering the alternatives; or neglecting to look ahead and anticipate the ramifications of a particular decision or course of action.

There are numerous overlaps between these two approaches. But there has also been a tendency for them to be applied in different specialist areas. The D’Zurilla and Goldfried (1971) model has been more frequently used, or cited as a seminal source, in work on emotional and mental health problems (Nezu, D’Zurilla, Zwick, & Nezu, 2004; Nezu, Nezu, & Houts, 1993). Specific areas of focus have included anxiety-related problems (Nezu et al., 2004); depression (Nezu, Nezu, & Perri, 1989); closed head injury (Foxy, Martella, & Marchand-Martella, 1989c); obesity (Perri et al., 2001); and schizophrenia (Favrod, Caffaro, Grossenbacher, Rubio, & Von Turk, 2000). The approach has also been applied within psychological responses to cancer (Nezu, Nezu, Houts, Friedman, & Faddis, 1999) and a variety of other medical problems (Nezu et al., 2004). When the methods are used in healthcare services, they are most commonly designated as *problem-solving therapy*.

By contrast, the model of Spivack et al. (1976) has been more extensively applied in child development and educational settings. In this context it has sometimes formed part of a broader curriculum designed to teach thinking skills for application to social problems. This parallels methods such as those developed by Feuerstein (1980). It has also been used with other difficulties including conduct disorder, substance abuse, gambling, and criminal offending. In educational and criminal justice settings, work of this kind is more frequently entitled *problem-solving training*. Despite these differences in focus and nomenclature, to a large extent the fundamental methods remain the same.

Elements of Problem-Solving Training

In their initial conceptualisation, D’Zurilla and Goldfried (1971) envisaged problem solving as a progression through five stages. They were delineated as:

1. Problem orientation or “set”;
2. Problem definition and formulation;
3. Generation of alternative solutions;
4. Decision-making;
5. Solution implementation and verification.

In advocating the view that the ability to secure ideas for solving problems is a skill that can be acquired, D’Zurilla and Goldfried (1971) cited research on the procedure of *brainstorming*. This was originally developed by Alex Osborn, an advertising executive, during the 1930s and described in his book *Applied Imagination* (Osborn, 1963). The term is derived from the metaphor of using the brain to storm a problem. D’Zurilla and Goldfried were impressed by studies which had suggested that producing more ideas led to producing better ideas. Although this expectation was fulfilled in their own experimental studies, it was not always fully confirmed by subsequent research (Stein, 1975). It has, however, been shown both that brainstorming leads to generating more ideas and that individuals can be trained to engage in it and produce more ideas than prior to such training. In problem-solving therapy, a collection of methods is employed for sequential development, practice, and application of each of the five skills in the D’Zurilla and Goldfried model.

By contrast, the work of Spivack et al. (1976) revolved around the following core propositions:

1. A number of separate cognitive skills can be isolated that are crucial for effective functioning in interpersonal situations. They include, for example, the ability to think of several options before acting, or to appreciate the likely consequences of an act.
2. Different combinations of these skills are important for adjustment during different phases of development (early and middle childhood, adolescence, adulthood).
3. These skills, though cognitive in nature, are directed towards the interpersonal domain and are psychometrically distinct from what we normally assume we assess by means of conventional intelligence tests.
4. Through specially developed methods of training it is possible to enable individuals deficient in those skills to acquire them, with consequent improvements in interpersonal adjustment.

It is a proposal common to both these approaches that the absence of effective problem-solving is associated with interpersonal difficulties and other mental health or behavioural problems. There are two possible causal pathways leading to this outcome.

In the first, poor problem solving is a result of *inhibition* of skill. Individuals have the ability to solve problems but they do not apply it. This is primarily a motivational issue and unlikely to be remedied by training. In the second, the problem derives from a *deficit* of skill. Individuals have not acquired adequate levels of skill for effective problem solving, most probably as a consequence of limited learning opportunities, constrained by parenting or other socialisation influences.

The manner in which interpersonal learning occurs is a function of its wider socio-cultural context. It is therefore often emphasised within problem-solving training procedures that the focus of intervention is upon the *how* rather than the *what* of problem-solving. Individuals are given assistance in acquiring or improving skills (changes in cognitive-behavioural capacities) without any presumptions regarding the ways in which those skills will be applied (the content of their thinking). This is based on the supposition that while culture has a profound influence on the dominant themes in individuals' thoughts (expressed through language, beliefs, values, personal goals), most aspects of cognitive processing show much less variation. However, more research is needed in order to determine the parameters of this.

Whatever its exact content, social problem-solving training is a comparatively distinct form of intervention within the broader cognitive-behavioural repertoire. Its application draws on methods of change including functional analysis of habitual reactions, skills practice, rehearsal, and feedback as used in behaviour modification. Additionally however, it draws on methods more familiar within cognitive and self-control therapies, such as self-monitoring, analysis of thinking patterns and distortions, Socratic questioning, guided discussion, and reflection. Thus, it occupies an intermediate point on a conceptual continuum between more behaviourally-oriented and cognitively-oriented therapies (McGuire, 2000a). Figure 1.1 depicts this relationship and locates problem-solving within a broader framework of connections between other cognitive-behavioural approaches.

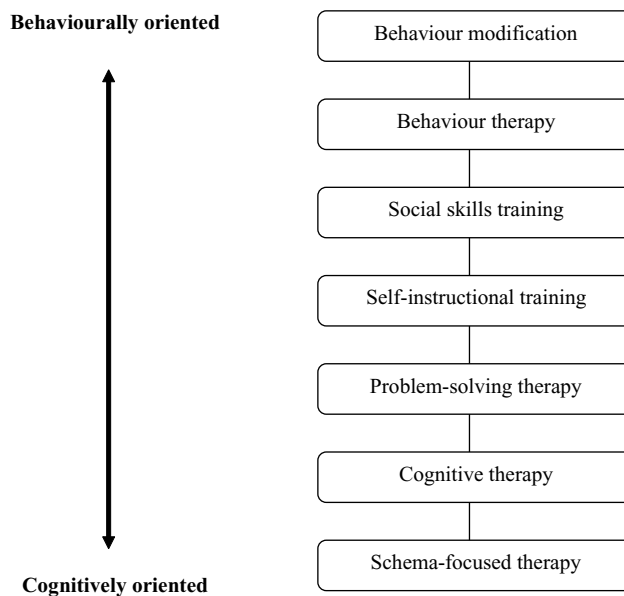


Figure 1.1 A continuum of methods in behavioural and cognitive therapy
 Source: Adapted from McGuire, J. (2000a), *Cognitive-behavioural approaches: An introduction to theory and research*. London: Home Office.

The component skills isolated in the studies of D’Zurilla and Goldfried (1971) and Spivack et al. (1976) and in numerous subsequent studies, have also been incorporated within integrative information-processing models of social adjustment and responding (Akhtar & Bradley, 1991; Crick & Dodge, 1994). In these models, a sequence of events and processes is hypothesised to precede an observed behavioural response. They include the encoding of environmental cues, attribution of motives, the generation of alternative solutions, pursuit of appropriate social goals, and acquisition of skills for enactment of social behaviours. These may be modified by tendencies towards egocentrism or limited perspective-taking. Individuals vary in their level of or engagement in different phases of the above sequence, and their competencies within discrete elements should be assessed directly using a comprehensive procedure designed to probe each area of potential deficit in turn.

Assessment of Social Problem-Solving

The assessment of the activities and skills that can be circumscribed and separately defined in this area has posed recurrent difficulties, several of which remain to be solved. In an initial review of the field, Butler and Meichenbaum (1981) expressed concerns with regard to several aspects of the measures then in use. A central issue was the extent to which the various tasks employed genuinely tapped events or abilities that were activated in everyday problem situations. In addition, a number of the commonly used assessments posed instrumentation problems and were psychometrically weak. Butler and Meichenbaum proposed, among other things, that measures be developed that were based on behavioural observation rather than verbal assessment of problem-solving. They also recommended a focus on self-reflective, meta-cognitive processes in problem situations. In the intervening period several measures have become more firmly established for assessment of problem-solving and are conventionally divided into two sub-groups respectively associated with *process* and *outcome*.

Process measures are designed to access general cognitive and behavioural activities that facilitate solving problems. They rely mainly on self-report. They therefore evaluate typical patterns of responding when individuals address cognitive-interpersonal problems and provide information regarding their perceptions of how they approach such challenges. The two most widely used measures for this purpose are the *Social Problem-Solving Inventory* (available in a variety of forms; see D’Zurilla & Nezu, 1999), and the *Problem-Solving Inventory* (Heppner & Peterson, 1982).

Outcome measures, by contrast, entail the assessment of performance or problem-solving competence, as judged by the products of the activity. To a certain extent this entails the making of value judgements which will inevitably be informed by culturally prescribed expectations as to what is acceptable in a given context, what is a better quality response, or more likely to be effective, given presumed situational constraints. They include such measures as the *Alternative Thinking Test* (Spivack & Platt, 1980); *Means-End Problem-Solving*

(MEPS; Spivack & Platt, 1980); and the *Adolescent Problems Inventory* (Freedman, Rosenthal, Donahoe, Schlundt, & McFall, 1978; Palmer & Hollin, 1996).

Issues in the assessment of problem-solving orientation and skill are discussed in more detail by D’Zurilla and Maydeu-Olivares (1995) and a more recent, and wider-ranging list of available measures is provided by D’Zurilla, Nezu, and Maydeu-Olivares (2004). The latter authors also argue that probably the most valid approach to assessment of problem-solving is by the means of *self-monitoring* procedures. Here individuals are asked to record their everyday experiences of problems and their attempts to solve them. The record so maintained will bear a much closer relationship to their actual problem-solving in respect of both process and outcome. Its contents can subsequently be reviewed and solutions, or different components of their skills, can be rated for effectiveness and appropriate remedial strategies devised.

Interpersonal Cognitive Problem Solving (ICPS)

The model of problem-solving derived from the work of Spivack et al. (1976) has been particularly influential in the design of intervention programmes in offender services. Some further information will now be given on the way in which this approach was developed after its initial inception.

Following the work of Spivack and Levine (1963), a number of studies were made of differences in problem-solving ability between normal/adjusted and deviant/maladjusted groups. For example, Platt and Spivack (1972a) compared 53 short-stay psychiatric hospital patients with a staff control group matched in age and other criteria on the means–end stories test. Highly significant differences were found between the two; and a series of studies was initiated to explore the contrasts between patient and control samples in more depth (Platt, Siegel, & Spivack, 1975; Platt & Spivack, 1972b). This work was also extended to include other groups such as heroin users (Platt, Scura, & Hannon, 1973), and disturbed adolescents (Platt, Spivack, Altman, & Altman, 1974).

These findings were cast in terms of a developmental model of the acquisition and application of a range of abilities for solving problems in the interpersonal realm. The resulting conceptualisation, known as *Interpersonal Cognitive Problem Solving* (ICPS) (Spivack et al., 1976) envisaged such skills as emerging during child and adolescent development. The extent to which they matured was stimulated and fostered—or conversely inhibited—by aspects of child-rearing and other socialisation practices (Shure & Spivack, 1978). At the same time other projects were undertaken to establish the factorial purity of the MEPS and to determine its status as comparatively independent of intelligence (e.g. Siegel, Platt, & Peizer, 1976). Another strand of research involved exploration of the developmental processes involved in the accretion of social problem-solving abilities. Research was carried out with a number of age-groups, including 4-year-olds (Shure, Spivack, & Jaeger, 1972) and 10- to 12-year-olds (Shure & Spivack, 1972). Among all age cohorts studied, the MEPS test and other specially devised measures revealed significant differences between disturbed or maladjusted groups and their normative peers. Spivack et al. (1976) also collated

evidence that at successive stages of development, a different selection of ICPS skill becomes vital in ensuring adjustment. In adolescence, when young people may become at risk of involvement in delinquency, the principal ICPS skills are held to include the following:

1. *Alternative-solution thinking*: "an individual's ability to generate in his or her own mind different options (solutions) that could potentially be put into action to solve a problem" (Spivack et al., 1976, p. 19).
2. *Means-end thinking*: "the ability to orient oneself to and conceptualise the step-by-step means of moving towards a goal" (ibid., p. 83).
3. *Consequential thinking*: "the ability to generate in one's own mind what might happen as a direct result of carrying out an interpersonal act" (ibid., p. 31).
4. *Social cause-and-effect thinking*: "the ability to relate one event to another over time with regard to the 'why' that might have precipitated an event" (ibid., pp. 38-39).
5. *Perspective taking*: "the ability to see interpersonal situations from the perspectives of other involved individuals" (ibid., p. 83).

Numerous studies have been conducted to examine the relationship between measures of interpersonal problem-solving skill and social adjustment. For example, Richard and Dodge (1982) obtained peer ratings on a sample of 24 children aged between 7 and 10 in an infant/junior school. Within each school grade, the children were thus classified as "isolated", "aggressive", or "cooperative"; ratings were also made by teachers of the children's popularity in their respective peer groups. The children were administered the Means-End Problem-Solving Stories (MEPS). There was a close relationship between children's peer status, their social adjustment, and their performance on the MEPS, confirming previous findings in this vein. Further confirmation of significant associations between sociometric status as an index of adjustment and social-cognitive skills came from studies such as those of Ford (1982) and Marsh (1982). Deluty (1981) found differences in social-cognitive skills between children respectively classified as predominantly assertive, aggressive or submissive in their interactional style.

Comparisons between deviant and non-deviant groups, or between members of groups varying in perceived status or behavioural ratings of adjustment, were undertaken in many settings and with regard to numerous kinds of psycho-social problem. The groups studied have included emotionally disturbed boys differing in popularity (Higgins & Thies, 1981a); prison inmates judged as "successful" or as "misfits" within their institution (Higgins & Thies, 1981b); university students varying in levels of depression (Gotlib & Asarnow, 1979); and narcotic drug abusers rated as having good versus poor prospects of recovery (Appel & Kaestner, 1979). Deficient problem-solving skills have also been shown to be associated with such diverse difficulties as unplanned pregnancies (Flaherty, Marecek, Olsen, & Wilcove, 1983; Steinlauf, 1979), suicide attempts (Asarnow, Carlson, & Guthrie, 1987; Schotte & Clum, 1987), agoraphobia (Brodbeck & Michelson, 1987), and depression among older adults (Kleftaras, 2000).

Several studies suggest that cognitive processes and difficulties in problem-solving skills such as perspective taking may influence factors that are associated with the likelihood of committing an offence. For example, in a meta-analysis of 41 studies Orobrio de Castro, Veerman, Koops, Bosch and Monshouwer (2002) found a strong relationship between aggressive behaviour and attribution of hostile intent. In a smaller-scale review, Jolliffe and Farrington (2003) found a significant association between violent offending and low cognitive empathy, though the possibility that this was a function of intelligence and socio-economic status could not be ruled out.

More specifically, social problem-solving skill deficits have been linked to aggression in several populations including children, adolescents, and adults. Lochman and Lampron (1986) found that aggressive boys generated fewer assertive solutions to conflicts than non-aggressive controls. Lochman and Dodge (1994) discovered differences between aggressive and non-aggressive boys on several social-cognitive processing tasks, with the more violent boys being marked by a larger number of such deficits. Among adolescents, Jaffee and D'Zurilla (2003) showed that several dimensions of social problem-solving were associated with aggression, juvenile delinquency, and other risk-taking behaviours. Working respectively with college students and with a non-offending adult sample, D'Zurilla, Chang, and Sanna (2003) and McMurrin, Blair, and Egan (2002) found that poorer problem-solving skills mediated the links between other variables such as self-esteem, anger, hostility, heavy drinking, and aggression.

INTERVENTION STUDIES

From the accumulating evidence of the foregoing studies, the corollary proposition has emerged that those individuals who are deficient in skills such as means-end thinking can be given training to improve their abilities. If their limitations in respect of social problem-solving are partly responsible for their adjustment difficulties, such training should lead not only to enhanced social-cognitive skills but also to improvements in behaviour and mental health. In an early study Spohn and Wolk (1963) reported their work with psychiatric in-patients diagnosed as schizophrenic and showing marked withdrawal symptoms. Their research showed that group-based training sessions in which patients jointly worked on *impersonal* problems reduced their levels of social withdrawal and improved their rates of social contact. Given such a finding it might be expected that interventions based on specific social interaction or interpersonal problem-solving training could be similarly effective, if not more so.

Initial attempts to test such a proposition were made principally with kindergarten and elementary (primary) school children. Shure et al. (1972), for example, trained 22 four-year-old children by means of a 50-session training course covering basic communication, self-awareness, and problem-solving skills. The latter included the ability to verbalise alternative possible solutions to problems, and to think consequentially ("If this happens, what else will happen?"). By comparison with attention placebo and no-treatment control groups, trained

children showed greater improvement in problem-solving scores and were more able to delay gratification following the sessions. There was also a close relationship between increased problem-solving skills and improved social behaviour. While not all of the findings were statistically significant, there were marked differences between the experimental and control groups on the majority of the indices used.

Results such as these led to further projects with the aim of designing and implementing preventive problem-solving training programmes for children aged from 4 years upwards. Follow-up evaluation of these programmes showed them to be an effective means of preventing and reducing behaviour problems in groups of at-risk children (Shure, 1993; Shure & Spivack, 1979, 1982). Recent studies have continued to provide support for the effectiveness of social problem-solving training for children with conduct problems even at a very early age (Webster-Stratton, Reid, & Hammond, 2001). Training programmes were also developed for parents of young children (Shure & Spivack, 1978), founded on the principle that the ability to solve interpersonal problems was fostered by a specific style of interaction with children in which they were encouraged to think situations through for themselves. Other versions of problem-solving training designed to improve general social awareness have also been extensively used in work with children in middle school, in the age range 8-11 (Frauenknecht & Black, 2004).

Reviewing the by then voluminous literature on problem-solving training and therapy, Heppner and Hillerbrand (1991) proposed a useful framework for classifying interventions in terms of three levels of complexity.

First, some studies were focused on evaluation of single components of problem-solving training, such as the ability to define problems or generate alternative solutions. Several studies along such lines were reported by Nezu and D'Zurilla (1979, 1981a, 1981b; D'Zurilla & Nezu, 1980). Thus, when individuals were given explicit instructions and training on the process of defining and formulating problems, there were significant improvements in both the quantity and quality of solutions they generated and in the effectiveness of their decision-making.

Second, other studies evaluated the use of problem-solving skills therapy as a single-modality package in its own right. This is illustrated in research by Nezu (1986; Nezu & Perri, 1989) on the treatment of depression. Individuals diagnosed as suffering from unipolar depression were randomly allocated to one of three conditions: (1) problem-solving therapy involving a structured, systematic approach; (2) problem-focused therapy which primarily entailed discussion without a sequential, skills-training focus; and (3) a waiting list control. Substantial reductions in depressive symptoms were observed only for clients in the first of these groups, and were maintained at a six-month follow-up.

This kind of study, of evaluating extended problem-solving training, is also exemplified in a paper by Yu, Harris, Solovitz, and Franklin (1986), employing the ICPS model. A group of child outpatients attending a psychiatric clinic was divided and assigned to either a problem-solving intervention or a control condition. The intervention was a 34-session course addressing problem-solving skills. In the control condition, subjects attended the clinic and took part in a

typical range of other “ordinary” treatments. Subsequent comparisons showed significant differences in favour of the group trained in ICPS skills in terms of both improved behaviour and social competence.

Studies along these lines have been conducted with an impressively wide variety of problems, in the majority of cases with successful results. “Social development” and related packages drawing heavily upon ICPS materials have proven effective in improving the classroom adjustment and interactive skills of 8-to-10-year-old children (Elardo & Caldwell, 1979; McClure, Chinsky, & Larcen, 1978).

Other studies have found problem-solving training effective in enhancing the interactions of adult psychiatric patients (Coché & Douglas, 1977; Coché & Flick 1975; Edelstein, Couture, Cray, Dickens, & Lusebrink, 1980; Hansen, St. Lawrence, & Christoff, 1985). In most of these studies, skill training was shown to have generalised outside practice sessions and in some cases (such as the work of Hansen et al. and that of Edelstein et al.), training gains were maintained after modest follow-up intervals of four months. Problem-solving training has also been shown to be efficacious in improving the interactive skills of problem drinkers (Intagliata, 1978) and in the treatment of childhood obesity (Graves, Meyers, & Clark, 1988).

Methods of training employing the ICPS approach have been used preventively on a sizeable scale with children of varying ages, including those attending primary (elementary) school but also in pre-school settings such as nursery or kindergarten. The foremost example of this is the work of Shure (1993, 2001) in Philadelphia schools, applying a series of educational classes in which the acronym ICPS is used to denote “I can problem solve”.

In the third and commonest format of interventions, problem solving is integrated with other types of training or therapy in a multi-modal programme. The range of permutations within this is fairly wide but the combinations have usually entailed some admixture of problem solving with self-instructional or self-management training, social skills training, values education, or relapse prevention. More elaborate versions have involved the application of such combined treatments within the context of family therapy, or alongside other types of intervention such as community support.

Considering this third tier of intervention, it is useful to draw on a distinction made by McFall (1982) and amplified by D’Zurilla et al. (2004) between *problem solution* and *implementation*. The first refers to the formal process of applying problem-solving training in order to identify solutions to problems with which individuals are faced. The second refers to other skills or capacities they will need to apply those solutions in practice, for example, in the areas of self-management or social and behavioural performance.

For example, Chaney, O’Leary, and Marlatt (1978) obtained reductions in alcohol consumption at one-year follow-up among problem drinkers who had participated in an integrated problem-solving and social skills training programme. This combination of methods, with the addition of relapse prevention, has also proved effective in work with individuals meeting the criteria for pathological gambling (Sylvain, Ladouceur, & Boisvert, 1997). Training interventions using ICPS methods or related kinds of approach have been combined with other cognitive-behavioural treatments. Examples of this are the work of Lochman

and Curry (1986) and of Kazdin, Esveldt-Dawson, French, and Unis (1987) with impulsive, acting-out adolescents. In both these pieces of work, the combined treatment proved superior to other treatments (anger-control training and relationship therapy respectively), with which it was being compared. The literature on the applications of these methods with emotionally or behaviourally disturbed children and adolescents is sizeable, and a comprehensive review is beyond the scope of the present chapter. Three meta-analytic reviews (Baer & Nietzel, 1991; Denham & Almeida, 1987; Durlak, Fuhrman, & Lampman, 1991) provided firm support for the use of problem-solving training methods in these contexts. More recently, Kazdin (1998) has provided a review of problem-solving skills training as an ingredient in the search for empirically supported treatments. This training is one of four therapy modalities (together with parent training, functional family therapy, and multi-systemic therapy) which to date have accumulated substantial support from randomised controlled trials.

While it might be anticipated that a moderate-to-high level of verbal ability is a prerequisite of beneficial participation in problem-solving training, research has shown that the methods can have positive effects in work with clients with learning disabilities. Foxx, Kyle, Faw, and Bittle (1989b) adapted methods and materials to meet these clients' needs, for example, by working in small groups ($n = 3$) and using cue cards in training exercises. More recently, Loumidis and Hill (1997a, 1997b) have described the use of a problem-solving training package for adults with learning disabilities, and obtained significant changes in a number of target problem-solving measures.

Detailed guidelines for construction of problem-solving sessions and for individual work in mental health have been given by Bedell and Michael (1985; see also Bedell & Lennox, 1997). Pekala, Siegel, & Farrar (1985) described the use of structured problem-solving support groups, while Coché (1987) provided guidelines for the application of the methods in practice and reviewed evidence for the usefulness of this approach. Platt, Taube, Metzger, and Duome (1988) outlined the ingredients of a combined problem-solving and communication skill programme and forwarded evaluative evidence.

The contribution of problem-solving-based interventions to mental health care has continued to be recognised and advocated by authors reviewing these fields (Dixon, 1999; Kendrick, 1999; Timmerman, Emmelkamp, & Sanderman, 1998). This includes work with persons suffering from severe and enduring mental health problems, and more broadly for stress management in community settings. This coverage has been strengthened by a recent book re-stating and refining the theoretical basis of the approach and reviewing developments across the social problem-solving field (Chang, D'Zurilla, & Sanna, 2004).

APPLICATIONS WITH OFFENDER POPULATIONS

Problem Solving and Models of Criminal Offending

During the 1980s there was a growing recognition of the potential significance of cognitive-interpersonal skills in work with offenders. This was encompassed in

proposals for interventions focused directly on *offending behaviour* (McGuire & Priestley, 1985) and also in a theoretical approach designated as the *cognitive model of offender rehabilitation* (Ross & Fabiano, 1985). Within the latter model, it is hypothesised that persistent offenders are likely to be found to lack, or to fail to apply, social problem-solving skills of one or more types. It is important to note that this does not entail the assumption that all offenders lack such skills, nor that their presence or absence differentiates between offender and non-offender populations. Such deficits are more likely to be found among persistent, repetitive, or chronic offenders. Similarly, it is not proposed that members of this category lack all component problem-solving skills. The aim of individualised assessment is to identify, in each case, which skills an individual possesses and which they do not, and the extent to which they make use of available skills.

In testing their model, Ross and Fabiano (1985) embarked upon a major review of evidence concerning problem solving and other skill deficits in persistent offenders. In a number of respects the evidence they sought was, perhaps not surprisingly, incomplete. Available findings were not wholly consistent with the hypothesis of cognitive skills deficits. However, significant differences emerged with sufficient consistency to suggest a need for intervention programmes that would focus attention on reducing impulsivity, cognitive rigidity, and other variables shown to be risk factors for criminal acts. Recent, more elaborate, versions of this model are based on *risk-need* concepts in which deficiencies of skill in problem solving, self-management, or social interaction have been empirically linked to greater risk of involvement in criminal activity (Andrews, 1995, 2001).

Further support for the proposition that limited or distorted cognitive processes may be a contributory factor in some offences, and may be a valid and promising target of intervention, has come from other studies on problem-solving difficulties amongst recidivist groups. They include the work of Zamble and Porporino (1988) on coping behaviour of adult prisoners in which more poorly adjusted prison inmates were found to have more limited problem-solving skills. Data relevant to this were also obtained by Zamble and Quinsey (1997) in their study of factors contributing to new offences among highly repetitive offenders. Offences were often preceded by difficulties in coping and by poor self-management, characterised by an absence of a positive problem-oriented approach, allowing problems to accumulate to intolerable levels. Deficits in problem-solving skills have been shown to be associated with homelessness among mentally disordered offenders (Morrison-Dyke, 1996).

Parallel findings have been obtained in studies with young offenders. Wesner (1996) found poorer problem-solving skills in offenders than among non-offending controls, with lowest levels of skill observed in a group classified as "under-socialised aggressive" offenders. Whitton and McGuire (2002) administered a problem checklist, the modified *Adolescent Problems Inventory* (API), and a self-report coping scale to a sample of 38 young offenders and compared them with a sample ($n = 43$) of non-offenders in a school setting. Young offenders reported a significantly higher frequency of serious problems than controls, higher rates of usage of non-productive coping, and lower rates of problem-focused coping. In addition, there was a low but significant correlation

between level of criminality as measured by numbers of previous convictions and API scores.

Recently, there has been a growing recognition within criminology of the significant role played by cognitive processes in the genesis of criminal acts. This is exemplified in a recent paper by Foglia (2000), who examines several dimensions of problem-solving skills, and describes the inclusion of cognitive variables in sociological theories which is often assumed at an implicit level. Such a departure accords with viewpoints expressed by psychologists seeking a rapprochement between psychological and sociological models of criminal conduct (Andrews, 1995; McGuire, 2000c).

Intervention Studies

Problem solving is a pivotal component within the majority of the structured programmes of cognitive skills training currently in use in criminal justice agencies in several countries. However, some of the earliest studies in this field addressed single components of problem-solving skills or applied programmes with a virtually exclusive problem-solving focus. Chandler (1973) examined the cognitive skill of perspective-taking in a group of persistent young offenders aged 11-13 years. Using specially designed role-playing and story-telling techniques, he found first that the young offender group were significantly more 'egocentric', that is, they appeared less able to adopt other people's perspectives than a comparison group of non-offenders. The young offender sample ($n = 45$) was randomly assigned to one of three conditions. The first consisted of a series of training sessions involving role-reversal and perspective-taking exercises. The other conditions were placebo and non-treatment controls. Following the intervention, evaluation showed that the treated group improved significantly in their role-playing and perspective-taking abilities. Moreover, an 18-month follow-up showed a significant reduction in the recidivism rate of the experimental group alone.

In a later study conducted with adult offenders, Platt, Perry, and Metzger (1980) described results of the Wharton Tract Program, based in a 45-bed, open-door prison "satellite" unit. Residents of the unit were in transition from prison to the community; all participants were adult male offenders with lengthy histories of criminal behaviour and of heroin use. Platt and his colleagues combined two elements in a structured group intervention programme. The first was a form of guided group interaction, a specified pattern of activity in which the group leader took active role; there was an emphasis on the group and its development and on the creation of a supportive atmosphere. Members were to be seen as agents of change for others. The second was a focus on overt behaviour and on the learning of a series of communication and problem-solving skills. These included recognising problems, generating alternative ideas, consequential thinking, means-end thinking, decision-making, and perspective-taking. At the end of a two-year follow-up period, group participants were reported by parole officers to be significantly better adjusted than the comparison sample. They had a significantly lower re-arrest rate (49% vs. 66%), and, if

re-convicted, had a lower rate of re-commitment to institutions, implying their re-offences were of a less serious nature. Also, if they were re-arrested, this occurred after a longer average arrest-free period (238 vs. 168 days) than for the control group members.

Hains and Hains (1988) used problem-solving training alongside impulse control training as an intensive intervention with a small group of five youths assessed as "conduct-disordered" and evaluated their progress by means of a multiple-baseline experimental design. Improvements in target skills were noted for four out of the five youths participating in this study. Koles and Jenson (1985) described the successful use of problem-solving training with a boy who manifested a number of severe behaviour problems including chronic fire-setting.

Claims regarding the possible importance of cognitive variables in attempting to reduce offender recidivism were consolidated by the outcome of a meta-analytic review by Izzo and Ross (1990). This study entailed a comparison of offender programmes with and without cognitive-training elements. Rather than computing a mean effect size, the authors reported the ratio of relative effectiveness of the two types of programme. Among the 46 interventions included in this review, the ratio of effect sizes for those with and without cognitive-training components was 2.5 to 1.

Two further meta-analytic reviews have confirmed cognitive-behavioural programmes as among the most consistently effective approaches to reduction of recidivism at the "tertiary prevention" level. Applying relatively broad inclusion criteria, Lipton, Pearson, Cleland, and Yee (2002) surveyed findings from 68 studies. Lipsey, Chapman, and Landenberger (2001) applied much stricter criteria and integrated results from 14 studies. In a more recent review, Wilson, Bouffard and MacKanzie (2005) focused their analysis on only the best designed outcome studies. All reviews obtained similar findings of positive effect sizes significantly different from zero. Problem-solving methods are a standard ingredient in programmes of this type, usually combined with other implementation elements in a "multi-modal" approach. The extent to which the use of cognitively-based intervention programmes had been pursued within criminal justice services even by the mid-1990s is amply illustrated in the two edited volumes by Ross, Antonowicz, and Dhaliwal (1995) and Ross and Ross (1995).

Whether problem-solving training is employed as a single therapeutic modality or conjoined with other methods, the essential process comprises a sequence of skills training exercises combining several types of activity. The precise series of skills included is likely to vary according to the age, assessed needs, and other features of the target participant group. Thus, there can be variations of emphasis between different programmes, and varying levels of elaboration, as some exercises or sessions may be formatted to impart different combinations of skills. Other chapters of this book illustrate some of the adaptations.

Beyond some of these common elements, there is considerable breadth in the manner in which problem-solving training has been applied. Klein and Bahr (1996) developed a family-centred problem-solving programme designed to help prisoners (male and female) who were about to leave institutions and rejoin their families. Structured problem-solving training yielded significant gains in the participants' ability to recognise problems, to generate solutions, and identify

appropriate sources of help. Using a random-allocation design, Wells (2001) has described positive outcomes from the use of a 20-session programme combining problem solving, social perspective-taking, and moral reasoning training, with young offenders identified as suffering from conduct or oppositional-defiant disorders. Working with incarcerated adult women offenders, Baguena and Belena (1999) found positive effects using a 33-session intervention on a wide range of component ICPS skills. Rose, Duby, Olenick, and Weston (1996) have described an integrated programme of group and family treatment, incorporating problem-solving training as a vital component, in work with institutionalised young offenders. With a quite different focus, Platt, Husband, Iguchi, and Baxter (1993) devised a programme of problem-solving training for use in the reduction of high-risk behaviours among intravenous drug users.

Another permutation of problem-solving with other types of intervention is the *Coping Power Program* developed by Lochman and Wells (2002). This was designed for young people in the age range from late middle childhood to early adolescence manifesting problems of aggressiveness, substance abuse, and initial involvement in delinquency. It contains two main elements: (1) a combined social problem-solving and social skills training programme; and (2) a series of behavioural skills-training sessions for parents. In a one-year follow-up, Lochman and Wells (2003) found significant reductions in rates of occurrence of the three target problems.

Bakker, Ward, Cryer, and Hudson (1997) focused on offenders convicted of driving while disqualified and formulated a model of this type of offence which located a key contributory factor as being poor interpersonal problem-solving. On this basis they devised a multi-modal programme comprising four elements: (1) cognitive restructuring; (2) social skills; (3) anger management; and (4) problem solving. The programme was delivered to a sample of offenders with encouraging preliminary results. A subsequent evaluative report by Bakker, Hudson, and Ward (2000) showed the programme had positive effects. The treated group made gains in social competence, exhibited reduced levels of general offending, and had a significantly lower rate of unlicensed/illegal driving; though no difference was found for drink-driving convictions.

Treatment programmes based on problem-solving training have also been applied in secure forensic settings with groups of offenders detained under mental health legislation. Baker (1995) developed a ten-session group programme based on D'Zurilla and Goldfried's model of problem-solving and evaluated it in a study employing random assignment to the programme or to a no-treatment control group. Training resulted in significant gains in problem-solving skills (judged by both a process measure, the *Problem-Solving Inventory*, and an outcome measure, the *MEPS*). Donnelly and Scott (1999) outlined effects of the *Reasoning and Rehabilitation* programme in a high security hospital in Scotland. This study involved a non-random control sample; significant changes in some problem-solving skill components were noted for the trained group only. Encouraging results were also obtained by Hughes, Hogue, Hollin, and Champion (1997) in a study with personality-disordered offenders. McMurrin and her colleagues (1999) devised a series of six 1½-hour sessions for use with a group of residents of a secure mental health unit. Significant pre- to post test

changes were noted in total scores on the *Social Problem Solving Inventory* and two of its sub-scales. Finally, McGuire (1999) described the development of a 12-session programme of social problem-solving training which was provided to two groups of patients in a high-security psychiatric hospital. Preliminary results were not encouraging, however, probably as a result of numerous logistical difficulties in ensuring regular delivery of sessions.

Returning to the issue of cognitive-behavioural programmes more broadly defined, these have also emerged as holding promise in yielding therapeutic benefits for offenders diagnosed with personality disorders, a group hitherto regarded as highly resistant to change. In a meta-analytic review Salekin (2002) synthesised findings from 42 outcome studies. Many were single case studies, and only eight included control groups, thus, no firm conclusions can be drawn. However, five studies of cognitive-behavioural therapy incorporating a cumulative sample of 246 individuals produced moderately good effect sizes.

In the past few years, numerous manualised programmes have been developed for use in criminal justice services (e.g., Bourke & Van Hasselt, 2001) and in some instances disseminated widely. The latter include *Reasoning and Rehabilitation* (Ross & Ross, 1995; see Chapter 9 of this volume), and offence-focused programmes such as *Think First* (McGuire, 2000b; see Chapter 10 of this volume). The *Reasoning and Rehabilitation* programme was originally developed in Canada and initially evaluated in probation services with very positive short-term outcomes (Ross, Fabiano, & Ewles 1988). Implementation on a much larger scale within Canadian federal prisons with a very large sample ($n = 1,444$) and a lengthier follow-up also yielded positive results, though these were moderated by offence type (Robinson, 1995; Robinson & Porporino, 2001). The programme has been applied extensively in both prison (Williams, 1995) and probation (Raynor & Vanstone, 1996) settings in the United Kingdom.

The use of such programmes is now a central activity in these services, following the advent of a new *Key Performance Indicator* by the prison service in 1996, and the announcement by the Home Office of the Crime Reduction Programme in 1998. Three large-scale outcome evaluations have been conducted. Friendship, Blud, Erikson, and Travers (2002) reported a 14% reduction in recidivism among prisoners who completed the *Reasoning and Rehabilitation* and *Enhanced Thinking Skills* programmes as compared with those who did not attend. In later evaluations, however, treatment effects were weaker and in one study were as low as 4% (Cann, Falshaw, Nugent, & Friendship, 2003; Falshaw, Friendship, Travers, & Nugent, 2003).

CONCLUSIONS

In a few instances, implementation of problem-solving training has taken place on an individual basis and has been evaluated by means of single-case and multiple-baseline experimental designs (Buie-Hune, 1997; Edelstein et al., 1980; Foxx et al., 1989a, 1989c; Foxx & Faw, 1990; Hains & Hains, 1988; Hansen et al., 1985). However, the typical format for delivery of problem-solving training in most settings has been in small groups, usually of six–eight members and with

group sizes up to ten. Kazdin (1998) has expressed reservations concerning the use of group-based treatment for certain populations such as delinquent youth where the influence of a deviant peer group may detract from the quality of the training, indeed, may create a risk of undermining it. While evidence pertaining to this remains equivocal, and there are numerous instances of successful group-based interventions with offenders, staff in criminal justice and secure mental health settings should beware of the possibility of contagion by anti-social attitudes. The provision of group activities within these services is a highly skilled and demanding task and within this context the use of "pro-social modelling" becomes particularly important, as does the establishment of ground rules regarding behaviour in groups.

Several other issues have perhaps not yet been adequately addressed (Denham & Almeida, 1987; Foxx & Faw, 2000) and therefore present questions for future research. First, the finding of cognitive skills deficits in client groups with behavioural or emotional problems has not been uniformly obtained. More searching investigation is required of the relationship between problem-solving component skills and patterns of mental disorder or criminal behaviour. Second, measured changes in problem-solving abilities as a product of training are not always accompanied by commensurate changes in behaviour or mental health status (e.g., Olexa & Forman, 1984). Even where this has been shown to occur, correlations between improved test performance and everyday problem-solving effectiveness may be low, casting doubt on the hypothesised link between these variables. Third, the relationship between apparent limitations of problem-solving skill and motivational factors remains unclear. This can be a serious obstacle in the selection of participants for cognitive skills interventions, and also a crucial influence on adherence versus attrition in programmes.

Overall, however, the development of problem-solving training is in many ways an excellent example of the value of the scientist-practitioner model at work. There has been a constant cycle of exchange between theory construction and the testing of hypotheses in applied settings. Furthermore, the majority of the studies carried out in this area from its inception have been with authentic clinical groups as opposed to analogue samples. The gradually extending use of the methods with offender populations provides invaluable opportunities for testing of more specific hypotheses and learning from practical experience.

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