

Problem Solving from Different Perspectives: An Investigation of Instructional Context on Social Problem-Solving Ability

David L. Penn, Will Spaulding, and Debra A. Hope
University of Nebraska-Lincoln

The Means-Ends Problem Solving task (MEPS) was used to assess the effect of instructional set on means-ends thinking. Half of the vignettes were presented from the perspective of a hypothetical individual and half from the subjects' own personal perspective. Results showed that subjects instructed to respond from the perspective of the hypothetical other produced less socially appropriate responses when their own perspective was presented first. When the order of instructed perspective was reversed (i.e., hypothetical other first), no differences in response quality or quantity were found. This finding supports the use of the MEPS in its traditional form. Results from a second task (alternative solution generation), designed to assess the effect of priming across different social problem solving-tasks, revealed a facilitative priming effect. Individuals generated more solutions to a problem situation when the previous MEPS vignettes had been in the instructed perspective order of Other-Self. Implications of the study's findings for a two-stage model of problem solving and clinical assessment are discussed.

In the 1970s, D'Zurilla and Goldfried (1971) and Spivack and colleagues (Platt & Spivack, 1972; Spivack, Platt, & Shure, 1976), proposed that *social cognitive problem solving* (SCPS) is a significant contributor to adjustment. SCPS has been defined as "... a cognitive-behavioral process through which an individual (or group) attempts to identify, discover, or invent effective or adaptive means of coping with problems encountered in everyday living" (p. 86) (D'Zurilla, 1987). It is an aspect of information processing concerned with an individual's ability to identify interpersonal or social problems and then resolve them.

One frequently used method to assess SCPS is the Means-Ends Problem Solving task (MEPS; Platt, Spivack, & Bloom, 1971). The MEPS reflects a

presumption that *means-ends thinking*, the processes by which behavioral strategies are related to desired outcomes, is a key component of SCPS. The MEPS consists of 10 interpersonal problem vignettes faced by a hypothetical protagonist. Each vignette has a beginning, in which a problem exists, and an ending, in which the problem is solved. The subject must fill in the middle for each vignette, that is, how the protagonist would go about solving the problem. There are a number of scoring procedures for the MEPS. Responses may be scored quantitatively for *means* (i.e., a discrete behavioral or cognitive step which brings the protagonist closer to the goal), *obstacles* (i.e., something which blocks a particular mean), or *time* (i.e., taking into consideration that some solutions take time or that there is an optimal time for a particular strategy to be implemented) (Spivack, Shure, & Platt, 1985). Responses can also be scored qualitatively with respect to *appropriateness* (i.e., the extent to which most people would consider the actions involved as socially appropriate) and *effectiveness* (i.e., how likely that solution is to bring about the desired result or endgoal) (Fischler, Kendall, & Vye, 1982).

The MEPS has been used to study the utility of means-ends thinking in a variety of contexts. Specifically, deficits on the MEPS have been found in both adult and adolescent psychiatric patients (Platt & Spivack, 1972), individuals at risk for suicide (Linehan, Camper, Chiles, Stroschl, & Shearin, 1987), heroin addicts (Platt, Scura, & Hannon, 1973), narcotic drug abusers (Appel & Kaestner, 1979), depressed college students (Gotlib & Asarnow, 1979; Zemore & Dell, 1983) and children with social and emotional problems (Fischler & Kendall, 1988). Lower scores on the MEPS have been associated with both more psychopathological profiles on the MMPI (Platt & Siegel, 1976) and fewer intimates in one's social environment (Mitchell, 1982). Thus, the MEPS seems to measure aspects of social cognition which are deficient among individuals exhibiting a diversity of behavioral, social and emotional deficits.

Despite its popularity, the construct validity of the MEPS has been criticized. Two reviews (Butler & Meichenbaum, 1981; Kendall & Fischler, 1984) concluded that the MEPS has too little correlation with ecologically relevant behavior to be considered a valid measure of social functioning. A third review (Bellack, Morrison, & Mueser, 1989) concluded that the MEPS measures a small and arbitrary selection of social cognitive processes, limited to those generative processes commonly thought of as "imagination."

The role of imagination in means-ends cognition is not straightforward. While imagination may contribute to creativity, a skill associated with effective SCPS (D'Zurilla, 1987), it may also represent a confounding factor; responses elicited may be unrelated to what the subject would actually do in a given situation. In the MEPS, the subject is asked to generate and organize a sequence of actions for a hypothetical person in a hypothetical situation. There is no explicit instruction to consider only those actions in which the subject would be able or willing to engage. The production of means by the subject is presumed to be free of such constraints. It is this presumption that, in part, inspires criticism that the MEPS

simply measures "imagination" (i.e., whatever means are imaginable, as opposed to accessible or feasible).

A logical first step in investigating the hypothesis that imagination confounds assessment of means-ends cognition is the instructional set of the MEPS. Specifically, it is unknown whether an instruction to consider the problem from the subject's own personal perspective would change MEPS performance. Butler and Meichenbaum (1981) suggested that such a manipulation would provide useful information regarding whether the MEPS assesses actual social problem-solving skills. If MEPS performance is influenced by the personal context of the instructional set, that would suggest that the traditional form of the MEPS elicits responses which are not indicative of actual social problem-solving strategies. In other words, responses may be imaginable, but are not necessarily relevant. Alternatively, if explicit instruction to solve the problem vignette from one's own personal perspective does not change MEPS performance, this would indicate that subjects automatically use their own perspective in addressing the hypothetical situations.

Research in SCPS, unlike other areas of social cognition (e.g., impression formation), has not conducted a systematic inquiry into instructional set context effects (i.e., priming) when multiple tasks are used. A brief review of the social problem-solving literature reveals that measures differ with respect to instructed perspective. Specifically, subjects may be asked to identify with a target individual observed on videotape (AIPSS; Donahoe et al., 1990) or respond from their own perspective (PSI; Heppner & Peterson, 1982). Therefore, it is unknown whether multiple task match/mismatches on instructed perspective facilitates or impairs performance.

This lack of empirical investigation has led to research in which the instructed perspective of one social problem-solving task is altered without assessing how that alteration affected performance on a subsequent task (e.g., Nezu & Ronan, 1988; see comments in Tisdelle & St. Lawrence, 1986). Therefore, the second purpose of the study was to assess whether instructed perspective on one social problem-solving task differentially influences performance on a different SCPS task. For the current study, the second task was Alternative Solution Generation which is a popular method of assessing SCPS and has been demonstrated to contribute to adjustment in children (Richard & Dodge, 1982), adolescents (Platt, Spivack, Altman, Altman, & Peizer, 1974), adults (Platt & Spivack, 1974), and the elderly (Spivack, Standen, Bryson, & Garrett, 1978).

METHOD

Subjects

Forty undergraduate students at the University of Nebraska-Lincoln served as subjects in partial fulfillment of the introductory psychology research requirement.

An undergraduate research assistant, trained by the first author, served as the experimenter.

Procedure

Subjects were tested individually and all responses to the problem-solving tasks were recorded on audio tape. Subjects were administered the MEPS task, followed by an alternative solution generation task developed specifically for this study. Subjects were then debriefed about the purpose of the study.

Measures and Scoring

Spivack et al. (1985) recommend the use of 7 of the 10 MEPS vignettes because three of the vignettes are less interpersonally oriented (e.g., stealing a diamond). In order to have an even number of vignettes for counterbalancing (to be described below), six of the seven vignettes of the MEPS were administered. The story involving the killing of an ex-SS trooper was deleted, as its theme differs from that of the other vignettes.

For half of the six vignettes, standard instructions as described by Spivack et al. (1985) were used. For the other half, the name of the hypothetical individual was substituted for the pronoun "you." Vignettes were administered in the order described by Spivack et al. (1985). For all subjects, the first set of three vignettes was assigned to either standard or "self" perspective instructions. The second set of three was then assigned the opposite perspective to that of the first set. Because of the modification of the instructional set, all vignettes also had to be changed from the past tense to the present tense. Efforts were made to personalize the vignettes for individual subjects, for example substituting "spouse" for "girl-friend" when appropriate.

Subjects were randomly assigned to one of two groups to manipulate order of instructed perspective within the MEPS task. For the Other-Self group, the first three MEPS vignettes were presented from the hypothetical individual's perspective, and the second three from the subject's own perspective. For the Self-Other group, this order was reversed. The counterbalancing of order allows assessment of priming effects *within* the MEPS task. Thus, instructional set *order* (i.e., other-first or self-first) represented a between-subjects grouping variable and instructional set *perspective* (i.e., other vs. self) a within-subjects variable.

In order to provide a comprehensive analysis of instructional set effects on social problem-solving ability, data were coded to reflect the total number of responses generated (i.e., sum of Means, Obstacles, and Time; according to Spivack et al., 1985, this is the most common method of scoring the MEPS) as well as the overall effectiveness and appropriateness of the responses given. As defined by Fischler et al. (1982), effectiveness is "... how likely that solution is

to bring about the desired result or endgoal” (p. 3). Appropriateness is defined as “. . . the extent that most people would consider the actions involved in that response as socially appropriate” (p. 8). This coding strategy allowed both qualitative and quantitative measures to be investigated as recommended by Fischler and Kendall (1988).

The alternative solution generation task comprised one social problem vignette, in which only the beginning of the problem is provided (in contrast to the MEPS, in which both the beginning and end of the vignettes are provided). Subjects were instructed to generate as many different solutions to the problem as possible. Subjects were administered *either* the personal perspective version of the task or that involving the hypothetical other (“C”). The situation was described as follows: “You (C) are (is) working on a project at your (C’s) job. It is an important project and one which can further your (C’s) career. However, there is someone working with you (C) on this project who gets on your (C’s) nerves. The person criticizes you (C) often and is always trying to look better than you (C) in front of the boss. What do (does) you (C) do?” Responses were coded for the total number of independent solutions (i.e., solutions with non-overlapping themes) generated by subjects.

For all measures of social problem solving, data were excluded from analysis if subjects showed any evidence of not responding from the instructed perspective for more than one of the three problem situations. The criteria for determining exclusion were: (a) The subject uses the personal pronoun “I” during *any* part of his/her response when presented with a story involving a hypothetical individual, or (b) The subject refers to a hypothetical individual when given a story from his/her perspective. A conservative approach was taken to data removal. For example, if the instructed perspective was the hypothetical other, and the subject began his/her story by including the name of the hypothetical other, but then responded with “What I would do in that situation is . . .” or “So, I am (the hypothetical other)”, then that subject’s data would be excluded. This led to the removal of five subjects’ data from the MEPS task. Four of these subjects were removed from the Self-Other group.¹ This finding will be discussed in more detail in the discussion section. For the alternative solution task, two additional subjects’ data were removed because they responded from the incorrect perspective on the alternative solution task itself. Thus, a total of seven subjects’ data were removed for the alternative solution task.

In summary, there were four conditions of match/mismatch between instructed perspective for the MEPS (i.e., the last three MEPS vignettes) and instructed perspective for the alternative solution task. Therefore, the test protocols for subjects were as follows: Protocol 1 - MEPS (Other-Self), alternative solutions (self); Protocol 2 - MEPS (Other-Self), alternative solutions (other); Protocol 3 - MEPS (Self-Other), alternative solutions (other); Protocol 4 - MEPS (Self-Other), alternative solutions (self).

RESULTS

Interrater Reliability

Two research assistants blind to the hypotheses of the study served as raters for the subjects' responses on the MEPS and the alternative solution generation task. Raters were trained by the first author by listening to practice tapes, discussing scoring criteria, and coming to a consensus. Interrater reliability was determined for the first 10 subjects, and then for every third subject afterward (raters overlapped in scoring for those subjects for whom reliability was calculated). This yielded the following Pearson correlation coefficients for the MEPS data: Total Responses = .89; Appropriateness = .70; Effectiveness = .88. Raters were also reliable for the total number of alternative solutions ($r = 0.93$).

MEPS Performance as a Function of Instructed Perspective

The scores for the respective measures of MEPS performance (Total Responses, Effectiveness and Appropriateness) were averaged across the three problem situations within the two instructed perspective conditions. To control for family-wise error, the three MEPS dependent measures were entered into a 2×2 (Self vs. Other instructed perspective \times Self-Other vs. Other-Self perspective order) mixed-model MANOVA with repeated measures on instructed perspective. There were no significant main effects for perspective order or instructed perspective. However, there was a significant instructed perspective \times perspective order interaction [$F(3,31) = 4.99, p < .01$]. Therefore, mixed model 2×2 ANOVAs with repeated measures on instructed perspective were run on each dependent measure to probe the significant interaction.

Analyses revealed no significant main effects nor interactions for Total Responses or Effectiveness. Thus, neither order nor instructed perspective affected the total number or the effectiveness of MEPS responses produced by subjects.

For Appropriateness, there was a significant interaction between instructed perspective and perspective order [$F(1,33) = 6.30, p < .02$]. To probe the interaction, two one-way ANOVAs were conducted on each instructed perspective (i.e., self vs. other) as a function of order. These analyses revealed that Appropriateness scores from the instructed perspective of the hypothetical individual were significantly higher for the Other-Self group compared to the Self-Other group [$F(1,34) = 6.65, p < .02$] (see Table 1 for the configuration of means). There were no significant main effects for instructed perspective and perspective order.

Alternative Solution Generation

The total number of alternative solutions were subjected to a 2×2 (instructed perspective order on the MEPS problem vignettes \times instructed perspective on

alternative solution task) between subjects ANOVA. This produced a significant main effect for instructed perspective on the previous MEPS vignettes [$F(1,29) = 6.98, p < .02$]. As shown in Table 2, subjects generated more solutions when the previous MEPS order was Other-Self rather than Self-Other. However, neither the main effect of perspective on the alternative solution task [$F(1,31) < 1, ns$] nor the interaction of MEPS-instructed perspective by alternative solution-instructed perspective [$F(1,31) = 2.03, ns$] were significant. These findings suggest that the key factor influencing subjects' ability to generate multiple solutions was not perspective on the alternative solution task, but the order of instructed perspective on the *previous* MEPS vignettes.

DISCUSSION

Two issues related to the measurement of social problem solving were investigated in the current study—the effect of problem-solving perspective on MEPS responses and priming across different social problem-solving tasks. The data generally support the use of the MEPS in its traditional form. There was evidence that priming does occur across social problem-solving tasks, suggesting that the context in which tasks are administered may be particularly important. Both of these issues will be examined in more detail below.

A change in response quality on the MEPS as a function of instructed perspective occurred only under certain conditions. Specifically, subjects instructed to respond to MEPS problem vignettes from the perspective of a hypothetical individual produced less appropriate responses when the preceding MEPS vignettes had been from their own perspective (Self-Other order). When the order was reversed (Other-Self), no differences emerged with respect to response quality or quantity. Thus, it appears that subjects' responses on the

TABLE 1. Means and Standard Deviations for Total Responses, Effectiveness and Appropriateness on the MEPS

| Order | n | Instructed Perspective | | | |
|-----------------|----|------------------------|--------|-------|--------|
| | | Self | | Other | |
| | | M | (SD) | M | (SD) |
| Other-Self | 19 | | | | |
| Total responses | | 3.20 | (0.99) | 3.46 | (1.31) |
| Effectiveness | | 4.20 | (0.56) | 3.87 | (0.61) |
| Appropriateness | | 4.83 | (0.37) | 4.96 | (0.11) |
| Self-Other | 16 | | | | |
| Total responses | | 3.30 | (1.03) | 3.12 | (0.99) |
| Effectiveness | | 3.99 | (0.63) | 4.03 | (0.60) |
| Appropriateness | | 4.87 | (0.42) | 4.71 | (0.41) |

MEPS were similar for themselves and a hypothetical individual *unless* the instructional set highlighted that subjects could consider means which they themselves would not use. Under these circumstances, subjects made less appropriate responses. Therefore, it appears that in the traditional administration of the MEPS (i.e., identify problem means for a hypothetical individual), subjects' responses are equivalent to those that would be elicited if subjects responded from their own perspective.

A two-stage model of cognition found in other areas of social cognitive study, such as referential communication (e.g., Rosenberg & Cohen, 1964, 1966), may account for these findings. According to the two-stage model, elements are retrieved from memory on the basis of their associative relationships in the generative first stage. In the selective second stage, the elements are selected and edited for further use. These generative and selective stages have been implicated as playing a role in means-ends cognition (e.g., Bellack et al., 1989). In applying this model to performance on the MEPS, it may be hypothesized that the elements could be specific problem-solving tactics, and the selection and editing processes would involve evaluations of whether the tactics are in the subject's skill repertoire, whether they are appropriate to the situation, etc.

The observed decrement in response appropriateness could be due to an inhibition of selective and editing processes when instructed perspective switches from self to other. Apparently, subjects automatically edit the appropriateness of their responses as related to their own skills, strategies, norms, etc. The contrast in instructed perspectives (i.e., from self to other), however, seems to cue subjects that responses need not be personally relevant. Therefore, selection and editing processes activated for personal perspective are inhibited by the subject because they are not applicable for problem vignettes involving the hypothetical individual.

In the data removed from the analyses (see procedure), four of the five subjects' excluded data came from the Self-Other group. These subjects responded to the MEPS vignettes from their own perspective (or used themselves and the

TABLE 2. Mean Number of Alternative Solutions as a Function of Instructed Perspectives on Alternative Solution Generation Task and Preceding MEPS Vignettes

| Perspective Order on MEPS | <i>n</i> | Instructed Perspective on Alternative Solution Task | | | |
|---------------------------|----------|---|---------------|----------|---------------|
| | | Self | | Other | |
| | | <i>M</i> | (<i>SD</i>) | <i>M</i> | (<i>SD</i>) |
| Other-self | 17 | 4.89 | (1.05) | 4.38 | (.74) |
| Self-other | 16 | 3.44 | (1.51) | 3.86 | (.89) |

hypothetical other interchangeably), despite being instructed to respond only from the perspective of the hypothetical other. It may be hypothesized that these subjects were unable to inhibit their natural tendency to respond from their own personal perspective.

A two-stage model of means-ends cognition has important implications for clinical assessment. Specifically, the locus of deficits in means-ends thinking may differ across different clinical populations. For example, the difficulties in controlled information processing found among individuals with depression (e.g., Cohen, Weingartner, Smallberg, Pickar, & Murphy, 1982; Ingram & Reed, 1986; Ingram, Lumry, Cruet, & Seiber, 1987; Wenzlaff, Wegner, & Roper, 1988) may produce cognitive rigidity which constrains the generational stage of means-ends cognition. This would be consistent with research demonstrating that depressed individuals generate fewer alternative solutions than nondepressed individuals (Nezu & Ronan, 1987). Conversely, deficits in means-ends problem solving in evaluation-conscious groups, such as social phobics, may represent excessive self-editing. Such an editing style would interfere with their ability to "defer judgement of responses," an important aspect of generative thought (D'Zurilla & Nezu, 1982). Support for this model is suggested by Marx, Williams, and Claridge (1992) who found that deficits in an early aspect of SCPS is associated with depression, while deficits in a later stage of SCPS occur with anxiety disorder. Therefore, comparison of clinical groups on the MEPS must take into consideration the nature of their particular social-cognitive deficits and how these deficits differentially affect the hypothesized two-stage process of means-ends thinking. Otherwise, conclusions regarding differences in MEPS performance across clinical groups will be confounded by the type of processing strategies that are engaged.

A priming effect was also found *across* social problem-solving tasks. Individuals generated significantly more alternative solutions when the instructed order of the previous MEPS vignettes was Other-Self. This finding has important implications for clinical assessment if, for example, investigators were to administer different social problem-solving tasks in succession without considering priming effects.

The priming effect across tasks is qualitatively different from that observed within MEPS task performance. In the former, a combination of Other-Self perspectives facilitated subsequent social problem solving, while in the latter, self-perspective preceding other-perspective led to a decrement in social problem solving (or a "negative prime"). Future research needs to further investigate the nature of priming effects that occur in social problem solving. For example, it cannot be inferred from the current findings whether the facilitation in social problem solving results from the immediately preceding perspective (i.e., Self), the particular perspective order, or the initial instructed perspective (i.e., Other).

The priming effects are clearly complex, and probably have important roles in laboratory task performance and in vivo social functioning. A logical starting

point may be to find task characteristics or administration strategies which prevent or weaken priming effects, such as introducing a distractor task in between assessment of different SCPS abilities. It would also be beneficial to assess priming effects across multiple SCPS vignettes on the second task. This would provide information about the stability of the prime and whether its effect can be manifest across a diversity of social problem situations, not just one specific situation to conflict in the work setting.

Three interpretative cautions should be noted about the testing procedure and the study's findings. First, MEPS vignettes had to be presented in the present tense, rather than the past tense, so as to be more realistic for subjects solving the problems from their own perspective. This modification certainly produces a slight variation in the MEPS task, although one could argue that by using the present tense, a more accurate measure of problem-solving potential, rather than previous performance, can be obtained. Second, the task used for generating alternative solutions was not empirically derived but developed because of its face relevance for most individuals (i.e., conflict resolution). However, because the issue investigated was the generation of alternative solution process, it was felt that the derivation of the task was not a critical aspect of the study. Further, inspection of the alternative solution data revealed that the solutions were normally distributed, with a range from one to seven generated solutions. This suggests that the particular problem situation elicited a reasonable sample of responses. Finally, the current findings do *not* speak to the issue of whether responses on the MEPS are those the subject would actually *use* in a problem situation. Rather, they support the hypothesis that subjects use their own perspective when addressing the hypothetical situations presented on the MEPS.

In conclusion, these data support the construct validity of the MEPS as it is traditionally administered. As noted above, the MEPS has been criticized as a measure of imagination with the implication that it may elicit responses which are imaginable, but not necessarily relevant. In other words, the responses might not be those generated if the individual was personally placed in that situation. However, the results suggest that subjects automatically edit their responses to some extent. One of the challenges of effective problem solving is to balance the benefits of considering as many solutions as possible, regardless of quality (i.e., imagination), with the risk of becoming sidetracked by solutions which are not feasible (i.e., inadequate editing). Excessive editing may prematurely eliminate novel, innovative solutions, which at first appear inappropriate. Future research is needed to determine if the MEPS achieves the appropriate balance between imagination and editing.

Future research should extend the findings reported above. A cross-validated study with a noncollege student normative group is advised. This would support the robustness of the study's conclusions across different reference groups. A natural extension of the current findings is a manipulation of instructed perspective among different clinical groups, so as to investigate the hypothesis that they engage in different means-ends thinking processes.

This study represents an attempt to gain a better understanding into a frequently used measure of SCPS, the MEPS task. By enhancing our knowledge of the validity of SCPS measures and the social-cognitive processes which influence performance on them (e.g., priming), we will be in a better position to assess social problem-solving ability and monitor treatment progress.

NOTE

¹ In order to control for differential removal rate of the data, the analyses were also run with the full sample (i.e., ignoring whether subjects adopted the instructed perspective). All analyses with the full sample produced identical results with the exception of solution effectiveness. In this case, significantly more effective solutions were produced from one's own perspective in the Other-Self group. This was likely due to an increase in the degrees of freedom, as the pattern of means is consistent with the smaller data-set in the text. Therefore, the results presented with the smaller sample can be interpreted as more conservative.

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