PERGAMON

Personality and Individual Differences 25 (1998) 241–252

PERSONALITY AND INDIVIDUAL DIFFERENCES

Age and gender differences in social problem-solving ability

Thomas J. D'Zurilla[a,*], Albert Maydeu-Olivares[b], Gail L. Kant[c]

[a]*Department of Psychology, State University of New York at Stony Brook, Stony Brook, NY 11794-2500, U.S.A.*
[b]*Department of Psychology, University of Barcelona, 08035, Barcelona, Spain*
[c]*Rochester Psychiatric Center and University of Rochester Medical School, Rochester, NY 14620, U.S.A.*

Received 26 September 1997

Abstract

Age and gender differences in social problem-solving ability were examined using the Social Problem-Solving Inventory-Revised (D'Zurilla et al., 1998). In general, the results suggest that social problem-solving ability increases from young adulthood (ages 17–20) to middle-age (ages 40–55) and then decreases in older age (ages 60–80). Specifically, compared to younger adults, middle-aged individuals scored higher on positive problem orientation and rational problem solving, and lower on negative problem orientation, impulsivity/carelessness style, and avoidance style. Compared to older adults, middle-aged individuals scored higher on positive problem orientation and rational problem solving. Some age differences were specific to one gender. Across age groups, gender differences were found on positive problem orientation and negative problem orientation. Within the young adult group, gender differences were also found on impulsivity/carelessness style.

Key words: everyday problem solving; practical problem solving; social problem solving; coping; age; gender

1. Introduction

Within the last 10–15 years, there has been a growing interest in the study of problem solving as it occurs in the real world. This research has spanned several different areas of psychology, including social, developmental/geropsychology, organizational, health, and clinical/counseling psychology. As might be expected, investigators in different areas have used different terms for this phenomenon, including practical problem solving (Denney and Palmer, 1981), practical intelligence (Sternberg and Wagner, 1986), everyday problem solving (Cornelius and Caspi, 1987), personal problem solving (Heppner and Petersen, 1982), and social problem solving (D'Zurilla and Nezu, 1982). We

*Corresponding author. Tel.: +1-516-632-7819; Fax: +1-516-632-7876; E-mail: tdzurill@psych1.psy.sunysb.edu.

0191-8869/98 $19.00
PII: S0191-8869(98)00029-4

have consistently used the latter term in our research and will continue to use it throughout this article. The adjective "social" is not meant to limit the study of problem solving to any particular type of problem; it is used only to highlight the fact that the focus of study is on problem solving within the natural social environment. Thus, research on social problem solving deals with all kinds of problems in living, including intrapersonal/nonsocial problems, impersonal problems, interpersonal problems, and broader community and societal problems.

We have defined social problem solving as the self-directed cognitive-behavioral process by which a person attempts to identify or discover adaptive ways of coping with problematic situations encountered in everyday living (D'Zurilla and Goldfried, 1971; D'Zurilla and Nezu, 1982). Two broad types of measures have been used to assess social problem-solving ability: (a) process measures and (b) outcome measures (D'Zurilla and Maydeu-Olivares, 1995). Process measures directly assess the specific cognitive and behavioral variables that constitute the problem-solving process, whereas outcome measures assess the product of this process when applied to specific problems, i.e., specific coping responses or "solutions". The most common type of process measure is the self-report inventory or questionnaire (Heppner and Petersen, 1982; D'Zurilla and Nezu, 1990). The most common type of outcome measure is a problem-solving performance test consisting of a set of hypothetical problems (Denney and Palmer, 1981) or the subjects' real current problems (Camp et al., 1989).

Two unresolved issues in this field are the questions of whether there are age and gender differences in social problem-solving ability. Thus far, the empirical studies on these issues have all used performance tests to measure problem-solving ability. With regard to the age issue, different results have been reported in different studies. One study (Cornelius and Caspi, 1987) found that problem-solving performance increased linearly from young adulthood (ages 20–34) to late adulthood (ages 55–78). On the other hand, Denney and Palmer (1981) found a quadratic relationship between age and problem-solving performance, with performance peaking in middle adulthood (ages 40–50) and then declining in older subjects (up to age 79). These results were generally replicated in later studies by Denney and her associates (Denney et al., 1982; Denney and Pearce, 1989), although peak performance occurred somewhat earlier in one study (Denney et al., 1982). No significant gender effects were found in any of these studies.

It is difficult to interpret the results of these studies because of the questionable construct validity of the problem-solving performance tests that were used. First of all, none of these tests was based on any specific theory or model of social problem solving. The minimal requirement to ensure construct validity would be to select test items that best fit a specific definition of the term "problem". The most common definition in the field, based on the early views of Davis (1966, 1973) and D'Zurilla and Goldfried (1971), is that a problem is a situation for which no effective response is immediately available to the person. As such, a problem sets the occasion for "problem solving", which is the process by which a person attempts to find or create an effective coping response. Because this response is the product of problem-solving behavior, it may be viewed as an indicator of problem-solving ability. On the other hand, if some or all of the test items in a problem-solving test are familiar situations for which the person has a ready effective response based on past learning experiences, then the test would not be tapping current problem-solving ability. Instead, test responses would simply be based on the process of automatic memory retrieval.

In addition to this conceptual argument, there is also an empirical reason for questioning the validity of these problem-solving performance tests. Recently, Marsiske and Willis (1995) per-

formed confirmatory factor analyses on three different problem-solving performance tests reported in the research literature, including the practical problems test used by Denney and Pearce (1989) and the everyday problems inventory used by Cornelius and Caspi (1987). The third test was the everyday problems test reported by Willis and Marsiske (1993). The results showed that these tests were virtually unrelated to one another, typically sharing less than 5% of their variance. The authors concluded that these three tests are measuring very different constructs. Again, because none of these tests is based on any specific theory of social problem solving, it is not clear what kind of knowledge or abilities they are measuring.

Because there is currently no general problem-solving performance test with proven reliability and validity for a population ranging from young adults to elderly individuals, the present study investigated age and gender differences in social problem-solving ability using a reliable and valid problem-solving process measure, i.e., the social problem-solving inventory-revised (SPSI-R; D'Zurilla et al., 1998). Compared to problem-solving performance tests, the major advantage of a process measure like the SPSI-R is that it permits an examination of age and gender differences in different components of problem-solving ability rather than just a single overall index of problem-solving ability, i.e., the quality of specific solutions. The major disadvantage of the SPSI-R is that it does not test actual problem-solving performance, or the ability of a person to apply his or her problem-solving skills effectively to specific problems. However, SPSI-R scores have been found to predict the use of adaptive problem-focused coping strategies in specific stressful situations (D'Zurilla and Chang, 1995). Because the results of previous studies are conflicting and difficult to interpret, we used the null hypothesis in the present study and predicted that we would find no age or gender differences in any of the components of social problem-solving ability measured by the SPSI-R.

2. Method

2.1. Subjects

A large data set was collected to examine age and gender differences in SPSI-R scores by merging three different age samples. The first sample consisted of 904 undergraduate college students between the ages of 17 and 20 from a large northeastern state university who participated in the study to fulfill a course requirement (hereafter referred to as the young adult sample). This sample included 499 women and 405 men. The second sample consisted of 100 middle-aged community-dwelling residents between the ages of 40 and 55, while the third sample consisted of 100 elderly community residents between the ages of 60 and 80. Each of these two samples included 70 women and 30 men. These subjects were initially recruited for a study on the relations between social problem solving and depression and anxiety (Kant et al., 1997) by appealing to a number of civic, social, and religious organizations in a large northeastern metropolitan area. In return for their participation, they were offered a free workshop on problem solving as a stress-management strategy.

2.2. Problem-solving measure

As noted above, social problem-solving ability was assessed in this study by means of the social problem-solving inventory-revised (SPSI-R; Maydeu-Olivares and D'Zurilla, 1996; D'Zurilla et

al., 1998). The SPSI-R is a 52-item, empirically-derived revision of the original theory-driven social problem-solving inventory (SPSI; D'Zurilla and Nezu, 1990). The latter instrument is linked to a social problem-solving model which assumes that problem-solving outcomes in the real world are largely determined by two major, partially independent processes: (1) problem orientation and (2) problem-solving proper (i.e. the application of problem-solving skills). Problem orientation is the motivational part of the problem-solving process, consisting of a set of relatively stable cognitive-emotional schema which describe how a person generally thinks and feels about problems in living, as well as his or her own problem-solving ability (e.g. challenge and threat appraisals, problem-solving self-efficacy beliefs, outcome expectancies). Problem-solving proper, on the other hand, refers to the search for a solution through the rational application of specific problem-solving skills that are designed to maximize the probability of finding the "best" or most adaptive solution for a particular problem. The model identifies four major problem-solving skills: (1) problem definition and formulation, (2) generation of alternative solutions, (3) decision making (judgment and evaluation of solutions), and (4) solution verification (evaluation of solution outcome). The SPSI consists of two major scales — the problem orientation scale and the problem-solving skills scale — which were designed to assess these two major components of the problem-solving process.

In a factor-analytic study of the SPSI, Maydeu-Olivares and D'Zurilla (1996) found that the theoretical concepts of problem orientation and problem-solving proper can be divided into five different, albeit related, problem-solving dimensions: (a) positive problem orientation, (b) negative problem orientation, (c) rational problem solving, (d) impulsive/careless problem solving, and (e) avoidance behavior. Based on these findings, D'Zurilla et al. (1998) revised the SPSI to measure these five empirically-derived problem-solving dimensions. Hence, the SPSI-R consists of five major scales. *Positive problem orientation* (PPO) taps a constructive cognitive set which includes the general tendencies to (a) appraise a problem as a challenge, (b) believe in one's own problem-solving capabilities, (c) expect positive problem-solving outcomes, and (d) commit time and effort to solving problems with dispatch. *Negative problem orientation* (NPO) measures a dysfunctional cognitive-emotional set consisting of the general tendencies to (a) appraise a problem as a threat, (b) doubt one's own problem-solving capabilities, (c) expect negative problem-solving outcomes, and (d) easily become upset, frustrated, and discouraged when attempting to solve problems in living. *Rational problem solving* (RPS) assesses a constructive cognitive-behavioral pattern involving the deliberate, systematic application of specific problem-solving skills (e.g. problem definition and formulation, generation of alternative solutions). *Impulsivity/carelessness style* (ICS) assesses a deficient cognitive-behavioral pattern characterized by impulsive, careless, hurried, and incomplete attempts to apply problem-solving strategies and techniques. *Avoidance style* (AS) measures a defective behavioral pattern involving the tendencies to (a) put off problem solving for as long as possible, (b) wait for problems to resolve themselves, and (c) shift the responsibility for problem solving to others. Greater problem-solving ability is indicated by higher scores on positive problem orientation and rational problem solving and lower scores on negative problem orientation, impulsivity/carelessness style, and avoidance style.

The SPSI-R scales have been found to have good psychometric properties. Coefficient alphas based on the three age samples in this study are presented in Table 1. As reported in D'Zurilla et al. (1998), test–retest reliabilities (3 week period) range from 0.72 (PPO) to 0.88 (NPO) in a sample of 138 college students. In another sample of 221 nursing students, test–retest coefficients range

Table 1
Coefficient alphas for the SPSI-R scales in the three age samples

Scale	Young[a]	Middle-aged[b]	Elderly[c]
PPO	0.76	0.79	0.69
NPO	0.91	0.89	0.92
RPS	0.92	0.95	0.93
ICS	0.83	0.82	0.81
AS	0.88	0.92	0.81

[a] $N = 904$.
[b] $N = 100$.
[c] $N = 100$.

from 0.68 (PPO) to 0.91 (NPO). Evidence supporting convergent and discriminant validity is reported in D'Zurilla and Maydeu-Olivares (1995) and D'Zurilla et al. (1998).

2.3. Procedure

Because the five SPSI-R scales are intercorrelated (D'Zurilla et al., 1998), mean age and gender differences were assessed by means of a multivariate analysis of variance (MANOVA) using three age groups (young, middle-aged and elderly) and the two genders. Before assessing mean differences across age and gender, we tested the equality of the covariance matrices across the six groups. Given the very large sample size, the covariance matrices were found to be reasonably similar, $\chi^2(75) = 98$, $p = 0.04$.

3. Results

The means and standard deviations for all five SPSI-R scales for all age samples by gender are presented in Table 2. An inspection of the means in this table suggests that positive problem orientation and rational problem solving increase from young adulthood to middle-age and then decrease in older age, whereas negative problem orientation, impulsivity/carelessness style and avoidance style decrease and then increase across these age groups. Although the gender differences are relatively small, the most notable differences are that men have slightly higher scores on positive problem orientation and impulsivity/carelessness style, whereas women have slightly higher scores on negative problem orientation.

The results of the MANOVA applied to these data are presented in Table 3. As the table shows, the multivariate age and gender effects were both found to be significant. Because the interaction effect was clearly nonsignificant, we can discuss the age and gender effects separately.

Table 2
Means and standard deviations for the five SPSI-R scales in all age samples by gender

Sample	PPO	NPO	RPS	ICS	AS	Cases
Both genders						
All	12.11 (3.61)	14.06 (8.05)	43.48 (13.11)	12.66 (6.43)	8.93 (5.67)	984
Male						
All	12.81 (3.47)	12.77 (7.80)	43.98 (12.87)	13.80 (6.40)	9.25 (5.75)	431
Young	12.70 (3.47)	13.48 (7.72)	43.22 (12.43)	14.30 (6.28)	9.51 (5.77)	374
Middle age	14.10 (3.60)	7.62 (6.28)	52.62 (14.32)	9.17 (5.86)	6.97 (6.05)	29
Elderly	12.89 (3.24)	8.54 (7.17)	45.07 (14.23)	11.86 (6.40)	8.21 (4.66)	28
Female						
All	11.56 (3.62)	15.08 (8.11)	43.09 (13.29)	11.77 (6.32)	8.68 (5.60)	553
Young	11.37 (3.51)	15.99 (7.91)	42.98 (12.90)	12.29 (6.20)	9.03 (5.44)	428
Middle age	13.29 (3.08)	10.42 (7.33)	46.45 (15.45)	8.82 (6.24)	6.07 (6.17)	62
Elderly	11.14 (3.45)	13.44 (8.47)	40.51 (13.15)	11.21 (6.48)	8.86 (5.50)	63

Standard deviations are in parentheses. PPO = positive problem orientation; NPO = negative problem orientation; RPS = rational problem solving; ICS = impulsivity/carelessness style; AS = avoidance style.

3.1. Age differences

As the univariate results in Table 3 show, significant age differences were found on all five problem-solving dimensions. In order to assess these age differences more specifically, we performed simultaneous pairwise contrasts between the different age groups. The results of these analyses are presented in Table 4. Because of the number of comparisons between the age groups in this table, we used an adjusted significance level based on the Bonferroni method ($\alpha = 0.003$). Compared to the young adults, the middle-aged group scored significantly higher on positive problem orientation and rational problem solving and significantly lower on negative problem orientation, impulsivity/carelessness style and avoidance style. Compared to the elderly group, the middle-aged subjects scored significantly higher on rational problem solving and their superiority over this age group on positive problem orientation approached significance, $p < 0.004$. The only other significant difference was that the elderly subjects scored significantly lower than the young adults on negative problem orientation.

Because a significant multivariate gender effect was found (see Table 3), we also examined age differences within each gender. The results of these analyses are presented in Table 5. The Bonferroni adjusted significance level for these data is $\alpha = 0.002$. As the table shows, the difference between the middle-aged group and the young adults on rational problem solving is significant only in men, whereas the differences between these two age groups on positive problem orientation and avoidance style are significant only in women. In addition, the difference between the middle-aged group and the elderly group on positive problem orientation is significant in women but not in men. Finally, the difference between the elderly group and the young adults on negative problem orientation is significant only in men.

Table 3
Results of a multivariate analysis of variance of SPSI-R scores by gender and age

Variable	Effect	F	df	p-value
Multivariate effects				
All	gender	11.00	5,972	<0.001
	age	7.43	10,194	<0.001
	interaction	1.31	10,194	0.217
Univariate effects				
PPO	gender	11.16	1,976	0.001
	age	7.78	2,976	<0.001
	interaction	0.27	2,976	0.762
NPO	gender	16.43	1,976	<0.001
	age	25.07	2,976	<0.001
	interaction	0.84	2,976	0.432
RPS	gender	6.02	1,976	0.014
	age	8.98	2,976	<0.001
	interaction	2.40	2,976	0.091
ICS	gender	2.33	1,976	0.127
	age	18.86	2,976	<0.001
	interaction	0.91	2,976	0.405
AS	gender	0.17	1,976	0.683
	age	8.87	2,976	<0.001
	interaction	0.42	2,976	0.660

The multivariate F test statistic is Wilks lambda; three age levels were used, corresponding to young adults (ages 17–20), middle-aged adults (ages 40–55) and elderly adults (ages 60–80); PPO = positive problem orientation; NPO = negative problem orientation; RPS = rational problem solving; ICS = impulsivity/carelessness style; AS = avoidance style.

3.2. Gender differences

As the univariate results in Table 3 show, significant gender effects across all age groups were found only on two problem-solving dimensions, namely, positive problem orientation and negative problem orientation. Based on the means in Table 2, men scored higher on positive problem orientation and lower on negative problem orientation than did women. For a more specific analysis of gender effects, we also examined gender differences within age groups. These data are presented in Table 6. The Bonferroni adjusted significance level for these data is $\alpha = 0.003$. As the table shows, the gender differences on positive problem orientation and negative problem orientation reached significance only in the young adult group, although the difference on negative problem orientation approached significance in the elderly group as well, $p = 0.006$. In addition, a new significant gender difference emerged in the young adult group on the problem-solving

Table 4
Simultaneous pairwise contrasts between age groups

Scale	Contrasts	Mean dif.	t-value	p-value
PPO	middle age: young	1.56[a]	3.93	<0.001
	elderly: young	−0.31	−0.04	0.971
	elderly: middle age	−1.87	−2.87	0.004
NPO	middle age: young	−5.29[a]	−6.15	<0.001
	elderly: young	−2.91[a]	−4.05	<0.001
	elderly: middle age	2.38	1.52	0.128
RPS	middle age: young	5.32[a]	4.22	<0.001
	elderly: young	−1.19	−0.06	0.956
	elderly: middle age	−6.51[a]	−3.15	0.002
ICS	middle age: young	−4.29[a]	−5.84	<0.001
	elderly: young	−1.82	−2.42	0.016
	elderly: middle age	2.47	2.51	0.012
AS	middle age: young	−2.90[a]	−4.14	<0.001
	elderly: young	−0.59	−1.11	0.268
	elderly: middle age	2.30	2.23	0.026

PPO = positive problem orientation; NPO = negative problem orientation; RPS = rational problem solving; ICS = impulsivity/carelessness style; AS = avoidance style.

[a]Statistically significant using a Bonferroni adjusted $\alpha = 0.05/15 = 0.003$.

dimension of impulsivity/carelessness style. Based on the means in Table 2, young women scored lower than young men on this dimension.

4. Discussion

In general, the present findings on age differences in social problem-solving ability, measured by the SPSI-R, are consistent with the results reported by Denney and her associates (Denney and Palmer, 1981; Denney et al., 1982; Denney and Pearce, 1989) using a problem-solving performance test. Taken together, the findings of these studies suggest that social problem-solving ability increases from young adulthood to middle-age and then decreases in older age. In addition, the present study extended these findings by identifying specific dimensions of social problem-solving ability on which there are age differences. Compared to young adults, middle-aged individuals scored higher on the constructive dimensions of positive problem orientation and rational problem solving, and lower on the dysfunctional dimensions of negative problem orientation, impulsivity/carelessness style, and avoidance style. Compared to an elderly group, the middle-aged individuals scored higher on positive problem orientation and rational problem solving, but they did not differ from the older group on any of the dysfunctional dimensions. It is noteworthy that the elderly group did not fall significantly below the young adults on any dimension of problem-

Table 5
Age differences within gender

Scale	Contrasts	Men			Women		
		mean dif.	*t*-value	*p*-value	mean dif.	*t*-value	*p*-value
PPO	middle age: young	1.41	2.03	0.051	1.92[a]	3.52	0.001
	elderly: young	0.20	0.31	0.762	−0.23	−0.49	0.622
	elderly: middle age	−1.21	−1.34	0.187	−2.15[a]	−3.17	0.002
NPO	middle age: young	−5.86[a]	−4.76	<0.001	−5.57[a]	−5.54	<0.001
	elderly: young	−4.95[a]	−3.50	0.001	−2.56	−2.24	0.028
	elderly: middle age	0.92	0.51	0.611	3.02	2.12	0.036
RPS	middle age: young	9.39[a]	3.43	0.002	3.47	1.69	0.096
	elderly: young	1.84	0.67	0.511	−2.47	−1.40	0.166
	elderly: middle age	−7.55	−2.00	0.051	−5.94	−2.32	0.022
ICS	middle age: young	−5.13[a]	−4.52	<0.001	−3.46[a]	−4.09	<0.001
	elderly: young	−2.45	−1.95	0.060	−1.08	−1.24	0.219
	elderly: middle age	2.69	1.65	0.105	2.38	2.10	0.038
AS	middle age: young	−2.54	−2.19	0.036	−2.97[a]	−3.56	0.001
	elderly: young	−1.29	−1.39	0.174	−0.17	−0.23	0.816
	elderly: middle age	1.25	0.87	0.386	2.79	2.66	0.009

Notes. PPO = Positive Problem Orientation; NPO = Negative Problem Orientation; RPS = Rational Problem Solving; ICS = Impulsivity/Carelessness Style; AS = Avoidance Style.
[a]Statistically significant using a Bonferroni adjusted alpha = 0.05/30 = 0.002.

solving ability. In fact, they were found to be significantly less dysfunctional than the younger group on the dimension of negative problem orientation.

These results suggest that middle-aged individuals, compared to both younger and older adults, have a more constructive and optimistic view of everyday problems and their own problem-solving ability, and they are more likely to confront their problems "head on" and make use of effective problem-solving skills. In addition, compared to younger adults, middle-aged individuals also have a less negative and dysfunctional orientation toward problems, and they are less likely to put off or avoid problem solving, or to engage in careless and impulsive problem solving.

The superior problem-solving ability of middle-aged individuals compared to younger adults probably represents the cumulative learning effect of an increasing number of independent problem-solving experiences from adolescence to middle adulthood. On the other hand, the greater problem-solving ability of middle-aged individuals compared to older adults may be accounted for more by a significant difference in the kinds of everyday problems faced by these two age groups rather than any deficiencies in basic skills or abilities. For example, in a previous study using the same middle-aged and elderly samples, Kant et al. (1997) found that the elderly group reported more health problems in their daily lives, whereas the middle-aged individuals reported more interpersonal problems. Because many of the health problems of older individuals are chronic and unchangeable, these individuals may become less optimistic about their problem-solving efficacy, which would tend to discourage them from applying their problem-solving skills. As Kant et al.

Table 6
Gender differences within age groups

Scale	Age group	Mean dif.	*t*-value	*p*-value
PPO	young	1.32[a]	5.36	<0.001
	middle age	0.81	0.96	0.338
	elderly	1.75	2.33	0.023
NPO	young	2.51[a]	4.54	<0.001
	middle age	2.80	1.88	0.066
	elderly	4.90	−2.66	0.006
RPS	young	0.25	0.28	0.782
	middle age	6.17	1.87	0.067
	elderly	4.56	1.45	0.155
ICS	young	2.02[a]	4.57	<0.001
	middle age	0.35	0.26	0.796
	elderly	0.65	0.45	0.658
AS	young	0.48	1.21	0.228
	middle age	0.90	0.66	0.517
	elderly	−0.64	−0.57	0.569

PPO = positive problem orientation; NPO = negative problem orientation; RPS = rational problem solving; ICS = impulsivity/carelessness style; AS = avoidance style.

[a]Statistically significant using a Bonferroni adjusted $\alpha = 0.05/15 = 0.003$.

(1997) have suggested, problem-solving training programs for older people should emphasize the re-appraisal of unchangeable problems as "challenges", and teach these individuals how to use their problem-solving skills to find satisfying emotion-focused solutions (e.g. social support, catharsis, religion, making something good come from the problem, helping others cope, etc.).

When age differences were examined within each gender, some differences were found to be specific to one gender. Greater rational problem solving in middle-aged individuals compared to young adults was found only in men. On the other hand, higher positive problem orientation and lower avoidance tendencies in the middle-aged group were found in women but not men. Men may improve more than women in rational problem solving from young adulthood to middle-age because younger men in our society are still given more opportunities than younger women for independent problem solving and decision making. Nevertheless, however, the greater independence that women are allowed when they leave adolescence and enter adulthood may enable them to improve more rapidly in problem orientation and the readiness to confront problems instead of avoiding them. In addition to these results, the lower negative problem orientation in elderly individuals compared to young adults was found in men but not women. This finding may reflect the general tendency of women to have a relatively high negative problem orientation compared to men in both of these age groups (see below).

Across age groups, significant gender differences were found on two problem-solving dimensions: positive problem orientation and negative problem orientation. Men were found to have a more

positive problem orientation and a less negative problem orientation than women. When these gender differences were examined within age groups, they were found to be significant only in young adults, although the difference on negative problem orientation approached significance in the elderly group as well. In addition to these results, young women were found to have lower scores on impulsivity/carelessness style than young men. Thus, although young men have a more positive and less negative orientation toward problems in living than young women, they tend to be more impulsive and careless when they attempt to solve these problems.

The results of this study are also consistent with the findings of several studies on age differences in coping. As noted earlier, the SPSI-R has been found to be related to the use of adaptive problem-focused coping in specific stressful situations, which includes problem-solving activities (e.g. information seeking, generation of alternative solutions) as well as instrumental actions aimed at changing the stressful situation for the better. A number of studies using some version of the ways of coping checklist (Folkman and Lazarus, 1980) have found that, in general, older individuals use less problem-focused coping than younger, middle-aged individuals (Felton and Revenson, 1987; Folkman et al., 1987; Irion and Blanchard-Fields, 1987).

In conclusion, both age and gender differences in social problem-solving ability were found in this study using a problem-solving process measure to assess social problem-solving abilities. Although the results on age differences are consistent with the findings of previous studies using problem-solving performance tests (Denney and Palmer, 1981; Denney et al., 1982; Denney and Pearce, 1989), significant gender differences in social problem-solving ability were not found in these studies. One possible explanation for the different results is that the performance tests used in these studies may not tap those aspects of social problem-solving ability on which there are gender differences, i.e. positive problem orientation, negative problem orientation and impulsivity/carelessness. In other words, a person's problem orientation and impulsive/careless tendencies may not significantly influence problem-solving performance in an experimental test situation. One major implication of the present findings is that age and gender differences should be assessed in future research on social problem solving in order to improve predictions of effective social problem solving, adaptive coping, and psychological adjustment. In addition, these results might have a useful practical implication for problem-solving training and therapy programs. Using the present findings, specific components of social problem-solving ability can be targeted based on the age and gender of the clients (for example, rational problem-solving skills in elderly individuals, negative problem orientation in young women, impulsive/careless tendencies in young men). By placing more of an emphasis on these targeted skills and dysfunctions in therapy, positive outcomes might be facilitated.

References

Camp, C. J., Doherty, K., Moody-Thomas, S., & Denney, N. W. (1989). Practical problem solving types and scoring methods. In J. D. Sinnott, *Everyday problem solving: theory and applications* (pp. 211–228). New York: Praeger.

Cornelius, S. W., & Caspi, A. (1987). Everyday problem solving in adulthood and old age. *Psychology and Aging, 2*, 144–153.

Davis, G. A. (1966). Current status of research and theory in human problem solving. *Psychological Bulletin, 66*, 36–54.

Davis, G. A. (1973). *Psychology of problem solving: theory and practice*. New York: Basic Books.

Denney, N. W., & Palmer, A. M. (1981). Adult age differences on traditional and practical problem-solving measures. *Journal of Gerontology, 36*, 323–328.

Denney, N. W., & Pearce, K. A. (1989). A developmental study of practical problem solving in adults. *Psychology and Aging, 4*, 438–442.

Denney, N. W., Pearce, K. A., & Palmer, A. M. (1982). A developmental study of adults' performance on traditional and practical problem-solving tasks. *Experimental Aging Research, 8*, 115–118.

D'Zurilla, T. J., & Chang, E. C. (1995). The relations between social problem solving and coping. *Cognitive Therapy and Research, 19*, 547–562.

D'Zurilla, T. J., & Goldfried, M. (1971). Problem-solving and behavior modification. *Journal of Abnormal Psychology, 78*, 104–126.

D'Zurilla, T. J., & Maydeu-Olivares, A. (1995). Conceptual and methodological issues in social problem-solving assessment. *Behavior Therapy, 26*, 409–432.

D'Zurilla, T. J., & Nezu, A. (1982). Social problem-solving in adults. In P. C. Kendall, *Advances in cognitive-behavioral research and therapy* (Vol. 1, pp. 201–274). New York: Academic Press.

D'Zurilla, T. J., & Nezu, A. M. (1990). Development and preliminary evaluation of the social problem-solving inventory. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 2*, 156–163.

D'Zurilla, T. J., Nezu, A. M., & Maydeu-Olivares, A. (1998). *Manual for the Social Problem-Solving Inventory-Revised.* North Tonawanda, N.Y.: Multi-Health Systems. In press.

Felton, B. J., & Revenson, T. A. (1987). Age differences in coping with chronic illness. *Psychology and Aging, 2*, 164–170.

Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior, 21*, 219–239.

Folkman, S., Lazarus, R. S., Pimley, S., & Novacek, J. (1987). Age differences in stress and coping processes. *Psychology and Aging, 2*, 171–184.

Heppner, P. P., & Petersen, C. H. (1982). The development and implications of a personal problem-solving inventory. *Journal of Counseling Psychology, 29*, 166–175.

Irion, J. C., & Blanchard-Fields, F. (1987). A cross-sectional comparison of adaptive coping in adulthood. *Journal of Gerontology, 42*, 502–504.

Kant, G. L., D'Zurilla, T. J., & Maydeu-Olivares, A. (1997). Social problem solving as a mediator of stress-related depression and anxiety in middle-aged and elderly community residents. *Cognitive Therapy and Research, 24*, 73–96.

Marsiske, M., & Willis, S. L. (1995). Dimensionality of everyday problem solving in older adults. *Psychology and Aging, 10*, 269–283.

Maydeu-Olivares, A., & D'Zurilla, T. J. (1996). A factor-analytic study of the social problem-solving inventory: an integration of theory and data. Cognitive Therapy and Research, 20.

Sternberg, R. J., & Wagner, R. K. (1986). *Practical intelligence: nature and origins of competence in the everyday world.* New York: Cambridge University Press.

Willis, S.L., & Marsiske, M. (1993). *Manual for the Everyday Problems Test.* Unpublished manuscript, University Park: Pennsylvania State University.