



Social problem solving and trait anxiety as predictors of worry in a college student population

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Received 30 March 2001; received in revised form 9 August 2001

Abstract

This study examined the relations between trait anxiety, social problem-solving ability, and two different measures of worry in a sample of 353 college students. The worry measures were the Penn State Worry Questionnaire (PSWQ), which measures worry frequency, uncontrollability, and distress, and the Catastrophic Worry Questionnaire (CWQ), which assesses extreme negative outcome expectancies associated with worry. Results of hierarchical multiple regression analyses showed that social problem-solving ability accounted for a significant amount of variance in both worry measures even after trait anxiety was controlled. Three different dimensions of social problem-solving ability were found to be significantly associated with worry. Negative problem orientation was positively related to both worry measures after controlling for trait anxiety. In addition, rational problem solving and impulsivity/carelessness style were both positively related to the CWQ after controlling for trait anxiety and problem orientation, which suggests that catastrophic worry has both constructive and dysfunctional problem-solving aspects that cannot be accounted for by the person’s problem orientation. The implications of these findings for theory, research, and practice were discussed. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Social problem solving; Worry; Anxiety; Generalized anxiety disorder

In recent years, researchers and practitioners in psychology have begun to pay increasing attention to the construct of worry. In its more benign form, worrying appears to be a relatively common and possibly universal human experience that may even have some adaptive value (Davey, 1994a). However, when worry becomes excessive and difficult to control, it can be very disturbing, self-defeating, and maladaptive. In fact, excessive and uncontrollable worry has been identified as the central feature of Generalized Anxiety Disorder (GAD) in the Diagnostic and

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Statistical Manual of Mental Disorders—Fourth Edition (DSM-IV, American Psychiatric Association, 1994). Hence, worry is now recognized as a significant psychological phenomenon worthy of serious empirical investigation into its nature and causes. Based on the views of several investigators that worry often represents defective or dysfunctional attempts to solve problems (Borkovec, 1985; Borkovec, Robinson, Pruzinsky, & DePree, 1983; Breznitz, 1971; Davey, 1994a; Stöber, Tepperwien, & Staak, 2000; Tallis, Davey, & Capuzzo, 1994), a number of recent studies have examined a possible link between social problem-solving processes and worry.

The term social problem solving refers to problem solving as it occurs in the natural environment (D’Zurilla & Nezu, 1982). Most of the research on the relations between social problem-solving variables and worry has been based on the model of social problem solving originally developed by D’Zurilla and Goldfried (1971) and later refined and expanded by D’Zurilla and Nezu (1982, 1999). According to this model, problem-solving outcomes in the real world are largely determined by two major, partially independent processes: (1) problem orientation and (2) problem-solving proper. Problem orientation is a metacognitive process involving the operation of a set of relatively stable cognitive-emotional schemas that describe how a person generally thinks and feels about problems in living, as well as his or her own problem-solving ability. Depending on its nature (positive vs. negative), a person’s problem orientation may either facilitate or inhibit problem-solving performance. Problem-solving proper is the core process in social problem solving, namely, the search for a solution through the application of problem-solving skills. Numerous studies have demonstrated that problem orientation and problem-solving skills are both important for effective real-life problem solving and adjustment (see review by D’Zurilla & Nezu, 1999).

Several studies have examined the relations between these two major components of social problem-solving ability and the experience of worry. In general, the findings have consistently demonstrated that problem orientation, but not problem-solving skills, is significantly related to worry in college students (Davey, 1994b; Davey, Hampton, Farrell, & Davidson, 1992; Davey, Jubb, & Cameron, 1996; Dugas, Letarte, Rhéaume, Freeston, & Ladouceur, 1995; Dugas, Freeston, & Ladouceur, 1997). Specifically, lower problem orientation scores are associated with higher levels of worry. In addition, other studies using clinical samples have found that GAD patients, whose worry is excessive and uncontrollable, have greater deficits in problem orientation (but not problem-solving skills) than other anxiety disorder patients and nonclinical controls (Dugas, Gagnon, Ladouceur, & Freeston, 1998; Ladouceur, Blais, Freeston, & Dugas, 1998; Ladouceur et al., 1999). Accordingly, Ladouceur et al. (1999) have concluded that poor problem orientation is a broadly specific GAD process variable not shared by other anxiety disorders.

The present study attempted to extend or improve upon the previous research in three important ways. First, we used a new multi-dimensional measure of social problem-solving ability, namely, the Social Problem-Solving Inventory-Revised (SPSI-R; D’Zurilla, Nezu, & Maydeu-Olivares, 2001), which assesses dimensions of social problem-solving ability that have not yet been examined. Most of the previous studies in this area used the original theory-driven Social Problem-Solving Inventory (SPSI; D’Zurilla & Nezu, 1990), which consists of two major scales that were designed to measure problem orientation and problem-solving proper, defined as the knowledge and use of effective problem-solving skills. However, recent factor-analytic studies (Maydeu-Olivares & D’Zurilla, 1995, 1996) have found that the SPSI is actually measuring two different problem orientation dimensions (positive problem orientation and negative problem

orientation) and three different problem-solving proper dimensions (rational problem solving, impulsivity/carelessness style, and avoidance style). Based on these findings, positive and negative problem orientation are now conceived as two partially independent dimensions rather than opposite poles on a single dimension. Rational problem solving is a constructive dimension that refers to the knowledge and systematic application of effective problem-solving skills (viz. problem definition and formulation, generation of alternative solutions, decision making, & solution implementation and verification). Impulsivity/carelessness style is a dysfunctional dimension characterized by impulsive, careless, hurried, and incomplete attempts to apply problem-solving skills, whereas avoidance style is another defective dimension that includes the tendencies to put off problem solving, wait for problems to resolve themselves, and shift the responsibility for problem solving to others.

The second way that we attempted to extend previous research was to add a new measure of worry, the Catastrophic Worry Questionnaire (CWQ), which we developed for this study. Most previous studies have focused on the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990). An inspection of the items in this questionnaire reveals that it is measuring worry frequency, uncontrollability, and distress. In addition to these dimensions, worry may also be measured in terms of the magnitude of negative outcome expectancies associated with worry (i.e. “catastrophic” expectancies). This dimension of worry is the focus of treatment in major cognitive-behavioral therapies for anxiety disorders (Beck & Emery, 1985; Ellis & Dryden, 1997). Hence, we developed the CWQ to measure this dimension and included it in this study along with the PSWQ.

The third way that we attempted to improve upon the previous research was to control for the personality variable of trait anxiety, which has been found to be strongly related to both worry and problem orientation (Davey et al., 1992; D’Zurilla et al., 2001; Kant, D’Zurilla, & Maydeu-Olivares, 1997; Meyer et al., 1990). Because of this finding, it was deemed important to show that any relationship found between problem orientation and worry is not completely redundant with the relation between trait anxiety and worry. In one earlier study, Davey et al. (1992) found significant correlations between two problem orientation measures derived from the Problem-Solving Inventory (PSI; Heppner & Petersen, 1982), namely, problem-solving confidence and personal control, and a measure of worry frequency in college students. However, after trait anxiety was partialled out, the correlations were no longer significant. On the other hand, using multiple regression analyses, Dugas et al. (1995, 1997) found that problem orientation measured by the SPSI significantly predicted worry even after controlling for anxiety level. However, the measure of anxiety in these studies was the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988), which measures *current* anxiety symptoms (i.e. over the past 7 days). Because we were interested in a more trait-like measure, the Trait Anxiety scale of the State/Trait Anxiety Inventory (Spielberger, 1983) was used in this study, which is also generally viewed as a measure of neuroticism or negative affectivity.

Based on theory and previous research in this area, the present study had two major hypotheses. First, we predicted that the set of problem orientation dimensions measured by the SPSI-R (viz. positive problem orientation and negative problem orientation) would account for a significant amount of variance in worry above and beyond what is accounted for by trait anxiety. In addition, we also expected to find that negative orientation would be the stronger predictor within this set. Second, we predicted that the set of problem-solving proper dimensions measured by the

SPSI-R (viz. rational problem solving, impulsivity/carelessness style, and avoidance style) would contribute significant incremental validity to the prediction of worry beyond what is accounted for by problem orientation alone. More specifically, we expected to find that impulsivity/carelessness style and avoidance style, but *not* rational problem solving, would be significant predictors within this set. Our prediction is based on the assumption that these two dimensions are representative of the type of thwarted or dysfunctional problem solving that worry theorists have hypothesized to be associated with worrying (e.g. Borkovec, 1985; Breznitz, 1971; Davey, 1994a). Consistent with this view, a recent experimental study by Stöber et al. (2000) found that worrying was associated with less concreteness when attempting to define problems. This performance deficiency could be reflecting the impulsive/careless and/or avoidant problem-solving styles measured by the SPSI-R.

1. Method

1.1. Participants

The participants in this study were 355 undergraduate college students (63% female) enrolled in two introductory psychology courses at the State University of New York at Stony Brook. The participants' mean age was 18.85 years (S.D. = 1.57). The breakdown of ethnic origin in the sample was as follows: 44.2% identified themselves as Caucasian/White, 29% as Asian, Asian American, or Pacific Islander, 10.4% as African American/Black, 7.6% as Hispanic or Latino, and 8.5% as of other ethnic origins. The distribution of the participants' number of years in college was as follows: 77.2% were in their first year, 16.3% in their second year, 3.7% in their third year, 2% in their fourth year, and 0.6% in their fifth year or more. Students took part in this study to partially fulfill a course requirement involving research participation.

1.2. Measures

1.2.1. *Social Problem-Solving Inventory-Revised, Short Form (SPSI-R; D'Zurilla et al., 2001)*

The SPSI-R is a 52-item self-report inventory that is derived from factor-analytic studies (Maydeu-Olivares & D'Zurilla, 1995, 1996) of the original theory-driven Social Problem-Solving Inventory (D'Zurilla & Nezu, 1990). It consists of five major scales that measure two different problem orientation dimensions (positive and negative problem orientation) and three different problem-solving proper dimensions (rational problem solving, impulsivity/carelessness style and avoidance style). *Positive Problem Orientation* (PPO) taps a constructive cognitive set which includes the general tendencies to (1) appraise a problem as a challenge, (2) believe in one's own problem-solving ability, (3) believe that problems are solvable, and (4) believe that successful problem solving takes time and effort. *Negative Problem Orientation* (NPO) measures a dysfunctional cognitive-emotional set consisting of the general tendencies to (1) appraise a problem as a threat, (2) doubt one's own problem-solving ability, and (3) believe that problems are intolerable (i.e. easily become frustrated and upset when confronted with problems). *Rational Problem Solving* (RPS) assesses a constructive cognitive-behavioral pattern involving the deliberate and systematic application of specific problem-solving skills (i.e., problem definition and formulation,

generation of alternative solutions, decision making, and solution implementation and verification). *Impulsivity/Carelessness Style* (ICS) assesses a deficient cognitive-behavioral pattern characterized by impulsive, careless, hurried, and incomplete attempts to apply problem-solving skills. *Avoidance Style* (AS) measures a defective behavioral pattern involving the tendencies to (1) put off problem solving for as long as possible, (2) wait for problems to resolve themselves, and (3) 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 present study used the short form of the SPSI-R (D’Zurilla et al., 2001), which consists of 25 items with five items in each scale. In a sample of 601 college students, correlations between the full scales of the SPSI-R and the short form scales range from 0.92 (RPS) to 1.00 (PPO). Coefficient alphas range from 0.74 (ICS) to 0.85 (NPO, RPS, AS) in college student samples. Test–retest reliability coefficients range from 0.72 (PPO, ICS) to 0.79 (NPO). Evidence supporting the convergent and discriminant validity of the full SPSI-R and the short form is reported in D’Zurilla et al. (2001).

1.2.2. *Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990)*

The PSWQ consists of 16 items that measure a trait-like tendency to worry, focusing on the dimensions of frequency, controllability, and distress (e.g. “When I am under pressure, I worry a lot,” “I worry all the time,” “Once I start worrying, I cannot stop, My worries overwhelm me”). The PSWQ has been found to have a single-factor structure, high internal consistency (coefficient alpha = 0.93), and high test-retest (4 weeks) reliability ($r = 0.93$). In the present sample, coefficient alpha was found to be 0.91. This worry measure has been found to correlate in the expected directions with a number of psychological variables, including anxiety, depression, and self-esteem (Meyer et al., 1990).

1.2.3. *Catastrophic Worry Questionnaire (CWQ)*

The CWQ is a 10-item self-report measure that was developed for this study. It was designed to assess catastrophic worrying defined as extreme negative outcome expectancies associated with worry (e.g. “When I worry, I often feel afraid that something horrible is going to happen,” “When I worry about something, I often think of the worst possible outcome”). During data collection, the items of the CWQ were integrated within the 16 items of the PSWQ, resulting in a 26-item worry questionnaire. Hence, the CWQ utilized the same instructions and format as the PSWQ. Preliminary findings indicate that the CWQ possesses good psychometric properties (Belzer & D’Zurilla, 1999). In the present sample, it was found to have good internal consistency (coefficient alpha = 0.89). Test–retest (4 weeks) reliability was found to be 0.76. A least squares exploratory factor analysis found that the CWQ is unidimensional. With regard to criterion validity, the CWQ has been found to correlate in the expected directions with measures of anxiety, depression, self-esteem, and life satisfaction.

1.2.4. *State/Trait Anxiety Inventory-Trait Form (STAI-T; Spielberger, 1983)*

The STAI-T is one of the most frequently used self-report measures of anxiety. It is comprised of 20 items designed to measure longstanding anxiety-proneness, or how an individual *generally* feels regarding cognitive and subjective features of anxiety. The STAI-T has been shown to have

good reliability, with coefficient alphas ranging from 0.86 to 0.95 and test-retest reliability estimates ranging from 0.65 to 0.75 (Spielberger, 1983). An inspection of the items in this scale revealed that one item assesses worry (“I worry too much over something that really doesn’t matter”). Hence, in the present study, this item was excluded from the analysis to avoid spuriously high correlations with the PSWQ and CWQ. After excluding this item, internal consistency was found to be high in the present sample (coefficient alpha = 0.92).

1.3. Procedure

All data collection for this study was conducted in a large group testing format during class periods. After providing informed consent, each participant completed a packet of pencil and paper measures including the self-report questionnaires reported in the present study. The study measures were administered in the following order: (1) a demographic information sheet, (2) the SPSI-R, (3) the PSWQ/CWQ, and (4) the STAI-T.

2. Results

Because prior research has demonstrated significant gender differences in self-report measures of social problem-solving ability (D’Zurilla, Maydeu-Olivares, & Kant, 1998), worry (Meyer et al., 1990) and trait anxiety (Spielberger, 1983), a series of independent samples *t*-tests using gender as the between-groups variable was conducted for all measures to determine if gender differences were evident in the present sample. For the social problem-solving measures, men were found to score significantly higher than women on positive problem orientation and impulsivity/

Table 1
Correlations among the study measures and their means, standard deviations, and internal reliabilities^a

	PPO	NPO	RPS	ICS	AS	PSWQ	CWQ	STAI-T
PPO	1.0							
NPO	−0.46***	1.0						
RPS	0.56***	−0.14**	1.0					
ICS	−0.16**	0.32***	−0.32***	1.0				
AS	−0.38***	0.49***	−0.19***	0.39***	1.0			
PSWQ	−0.30***	0.60***	−0.04	0.14**	0.24***	1.0		
CWQ	−0.29***	0.59***	−0.01	0.25***	0.32***	0.77***	1.0	
STAI-T	−0.43***	0.64***	−0.13	0.23***	0.37***	0.64***	0.66***	1.0
M	12.05	8.78	11.65	6.46	6.37	48.87	28.03	41.22
S.D.	4.03	4.33	4.00	4.02	4.15	13.95	9.42	11.40
α	0.76	0.80	0.77	0.77	0.77	0.91	0.89	0.92

** $P < 0.01$. *** $P < 0.001$.

^a $n = 353$; PPO, Positive Problem Orientation; NPO, Negative Problem Orientation; RPS, Rational Problem Solving; ICS, Impulsivity Carelessness Style; AS, Avoidance Style; PSWQ, Penn State Worry Questionnaire; CWQ, Catastrophic Worry Questionnaire; STAI-T, State-Trait Anxiety Inventory-Trait Form. Gender is partialled out of all correlations.

carelessness style, whereas women scored significantly higher than men on negative problem orientation. In addition, women scored significantly higher than men on trait anxiety and both worry measures. These findings are consistent with previous research. Because of these gender differences, gender was controlled in all subsequent analyses.

2.1. Relations between trait anxiety, social problem solving, and worry

The partial correlations among the study measures (with gender partialled out) and their means, standard deviations, and coefficient alphas are presented in Table 1. As the table shows, all measures have good internal reliability. Because of the number of correlations computed for each study measure, a more conservative level of significance was used, based on the Bonferroni method ($P < 0.01$). All problem-solving variables except rational problem solving (i.e. knowledge and use of effective problem-solving skills) were found to be significantly related to trait anxiety and both worry measures. As expected, the correlations with positive problem orientation are all negative, whereas the correlations with negative problem orientation, impulsivity/carelessness style, and avoidance style are all positive.

2.2. Trait anxiety vs. social problem solving as predictors of worry

In order to determine if social problem solving predicts a significant amount of variance in worry above and beyond what is accounted for by trait anxiety, two hierarchical multiple regression analyses were performed using a different worry measure as the criterion or dependent variable in each analysis. For each analysis, the same four steps were executed. In the first step, gender was entered into the equation to control for this variable. In step 2, STAI-T scores were entered to determine the contribution of trait anxiety to the prediction of worry. In the third step, PPO and NPO were entered simultaneously to determine if positive and negative problem orientation would predict a significant amount of variance in worry above and beyond what is accounted for

Table 2

Hierarchical regression analysis showing amount of variance in Penn State Worry Questionnaire accounted for by trait anxiety and social problem solving^a

	β	R	R^2	ΔR^2	d.f.	F
Gender	0.26***	0.26	0.07	0.000	1, 351	25.16***
Trait Anxiety	0.64***	0.68	0.46	0.388	1, 350	249.56***
Problem Orientation		0.71	0.51	0.056	2, 348	19.85***
Positive Problem Orientation	0.05					
Negative Problem Orientation	0.32***					
Problem-Solving Proper		0.72	0.52	0.010	3, 345	2.42
Rational Problem Solving	0.05					
Impulsivity/Carelessness Style	-0.03					
Avoidance Style	-0.09					

** $P < 0.01$. *** $P < 0.001$.

^a $n = 353$.

by trait anxiety. In the final step of each analysis, the three remaining SPSI-R scales (viz. RPS, ICS, and AS) were entered simultaneously into the equation to determine if any of the specific dimensions associated with problem-solving proper contribute significant incremental validity to the prediction of worry above and beyond that of problem orientation.

The first analysis focused on the PSWQ as the criterion measure, which assesses worry frequency, uncontrollability, and distress. The results of this analysis are presented in Table 2. Gender was found to account for a significant 7% of the variance in this measure of worry. After controlling for gender, trait anxiety accounted for a significant 38.8% of the variance in worry. Problem orientation added significantly to this prediction, accounting for an additional 5.6% of the variance beyond what is accounted for by trait anxiety. Within the set of problem orientation variables, only negative problem orientation was found to be a significant predictor of worry. The direction of this relationship was positive, indicating that a more negative problem orientation is associated with more worrying. In the final step of this analysis, problem-solving proper failed to account for a significant additional amount of variance in worry beyond what is accounted for by problem orientation. Overall, this analysis indicated that trait anxiety accounted for 39% of the variance in the PSWQ and social problem solving accounted for a significant additional 7% of the variance above and beyond what was accounted for by trait anxiety.

The criterion measure in the second regression analysis was the CWQ, which assesses catastrophic worrying or extreme negative outcome expectancies associated with worry. The results of this analysis are presented in Table 3. Gender was found to account for a significant 2% of the variance in this worry measure. After controlling for gender, trait anxiety was found to account for a significant additional 42.5% of the variance in worry. After partialing out the variance associated with gender and trait anxiety, problem orientation was found to account for a significant additional 4.8% of the variance in worry. As in the first analysis, only negative problem orientation was found to be a significant predictor of worry within the set of problem orientation variables. As expected, negative problem orientation is positively related to worry, indicating that a more negative orientation is associated with more worrying. In the final step of this analysis,

Table 3

Hierarchical regression analysis showing amount of variance in Catastrophic Worry Questionnaire accounted for by trait anxiety and social problem solving^a

	β	R	R^2	ΔR^2	d.f.	F
Gender	0.14**	0.14	0.02	0.000	1, 351	6.94**
Trait Anxiety	0.66***	0.67	0.44	0.425	1, 350	267.84***
Problem Orientation		0.70	0.49	0.048	2, 348	16.49***
Positive Problem Orientation	0.06					
Negative Problem Orientation	0.30***					
Problem-Solving Proper		0.71	0.50	0.012	3, 345	2.76*
Rational Problem Solving	0.13**					
Impulsivity/Carelessness Style	0.09*					
Avoidance Style	0.00					

* $P < 0.05$. ** $P < 0.01$. *** $P < 0.001$.

^a $n = 353$.

problem-solving proper accounted for a significant, albeit modest, 1.2% of the variance in worry above and beyond the variance accounted for by problem orientation. Within the set of problem-solving proper dimensions, rational problem solving and impulsivity/carelessness style were each found to be significant predictors of worry. Unexpectedly, however, rational problem solving is *positively* related to worry, indicating that more rational problem solving is associated with more catastrophic worrying. As expected, impulsivity/carelessness style was also found to be positively related to worry, indicating that more impulsive/careless problem solving is associated with more catastrophic worrying. Overall, this analysis showed that trait anxiety accounted for 42% of the variance in the CWQ and social problem solving accounted for a significant additional 6% of the variance above and beyond the variance accounted for by trait anxiety.

3. Discussion

The results of this study both support and extend previous research findings on the relations between social problem solving and worry. Our findings replicate and confirm the results of previous studies which showed that worrying is associated with a poor problem orientation (Davey, 1994b; Davey et al., 1992, 1996; Dugas et al., 1995, 1997). However, because a unidimensional measure of problem orientation was used in these studies, it cannot be determined from previous research if worrying is related to a negative problem orientation, the absence of a positive orientation, or both. The present study answered this question and also added to the previous research in several other ways that will be discussed later.

Because gender differences were found on several problem-solving measures and both worry measures, we controlled for gender in the present study. In addition, because negative problem orientation and both worry measures are highly related to trait anxiety (Table 1), we also controlled for this personality variable to investigate the possibility that it might account for the significant relationship between problem orientation and worry. After partialing out the variance associated with gender and trait anxiety, the set of problem orientation variables measured by the SPSI-R (viz. positive problem orientation and negative problem orientation) still accounted for a highly significant amount of the variance in both worry measures. Hence, the relationship between problem orientation and worry cannot be accounted for by trait anxiety (negative affectivity, neuroticism). Moreover, within the set of problem orientation variables, only negative problem orientation was found to a significant predictor. Positive problem orientation was not significantly related to either worry measure. These findings indicate that worrying is associated with negative thinking about problems in living and one's own problem-solving ability, but not with the absence of positive thinking. Based on the items in the SPSI-R, individuals with a negative problem orientation tend to view a problem as a threat rather than a challenge, doubt their own ability to solve problems effectively, and easily become upset and frustrated when confronted with problems.

After controlling for positive and negative problem orientation, the set of problem-solving proper variables measured by the SPSI-R (viz. rational problem solving, impulsivity/carelessness style, and avoidance style) accounted for a significant, albeit modest, additional amount of variance in the CWQ, but not the PSWQ. Further analyses indicated that the dimensions of rational problem solving and impulsivity/carelessness style were primarily responsible for the unique

relationship between problem-solving proper and catastrophic worry. Unexpectedly, however, both dimensions were found to be *positively* related to the CWQ, indicating that catastrophic worrying is associated with more rational problem solving *and* more impulsive/careless problem solving.

Based on the items in the SPSI-R, individuals who score high on the rational problem solving dimension report that they carefully and systematically gather facts and information about a problem, identify demands and obstacles, set a realistic problem-solving goal, generate a variety of different solutions, anticipate the possible consequences of each, systematically compare and judge the alternatives, and then choose and implement a solution while carefully monitoring and evaluating the outcome. In contrast, high scores on impulsivity/carelessness style indicate individuals who consider only a few solution alternatives, often impulsively going with the first idea to come to mind, scan alternatives and consequences quickly, carelessly, and unsystematically, and monitor and evaluate solution outcomes carelessly and inadequately.

When interpreting the above results for the CWQ, it is important to consider the correlations in Table 1, which have gender partialled out. The correlation between rational problem solving and catastrophic worry was found to be virtually zero. However, rational problem solving is significantly correlated with positive and negative problem orientation and the correlation with trait anxiety approaches significance. All three of these variables are significantly correlated with catastrophic worry. When the variance associated with trait anxiety and the two problem orientation variables was partialled out in the multiple regression analysis, a significant positive relationship emerged between rational problem solving and catastrophic worry (Table 3). This unexpected finding indicates that rational problem solving accounts for a small but significant amount of variance in catastrophic worry independent of the variance accounted for by gender, trait anxiety, and problem orientation. When considered with the results for impulsivity/carelessness style, these findings suggest that catastrophic worry, as defined by the CWQ, has both constructive and dysfunctional problem-solving aspects that cannot be accounted for by trait anxiety or the person's problem orientation. It is possible that the quality of the problem solving in catastrophic worry may vary within and/or across problematic situations depending on factors that might increase the stressfulness of the problem, such as the difficulty of the problem and the perceived significance of the problem for well-being. An increase in emotional stress could disrupt or inhibit the rational problem-solving process (D'Zurilla & Nezu, 1999; Janis & Mann, 1977).

Although the correlation between the PSWQ and the CWQ is relatively high in the present sample ($r = 0.77$), the differential results for the measures of rational problem solving and impulsivity/carelessness style provide some support for the discriminant validity of the CWQ. While the two measures have a large amount of variance in common, these results suggest that they are partially independent and not totally redundant. At the very least, the use of both measures in future research on this topic is warranted.

The findings of this study have important implications for future research and clinical practice. Because the SPSI-R only assesses the *process* of social problem solving (i.e. problem-solving attitudes and skills), and not the *outcome* of problem solving (i.e. the quality of solutions to specific problems, the occurrence or avoidance of solution implementation), future research should use social problem-solving performance tests to determine if worriers' actual problem-solving performance is, in fact, detrimentally affected by their negative problem orientations and their impulsive/careless problem solving style, as suggested by the results of this study. The absence of

such measures is a serious deficiency in the research on social problem solving and worry. A major obstacle to correcting this deficiency is the lack of construct valid social problem-solving performance tests. The problems associated with the construction of these tests and some recommendations for test development have been discussed by D’Zurilla and Maydeu-Olivares (1995). Finally, another important issue for future research is the identification of the possible situational and personal (e.g. cognitive, emotional) factors that may influence the quality of the problem-solving component of catastrophic worrying, resulting in rational problem solving some of the time and impulsive/careless problem solving other times.

With regard to clinical practice, the present findings have important implications for the treatment of anxiety disorders involving excessive and catastrophic worrying. Based on the present findings together with the results of previous studies on this topic, we would recommend a problem-solving therapy program that includes (1) a cognitive restructuring component aimed at reducing the negative thinking associated with a negative problem orientation (e.g. exaggerated threat appraisals, negative self-efficacy beliefs) and (2) a problem-solving skills component that focuses on the deliberate, systematic, and effective application of problem-solving skills in the natural environment. In other words, the emphasis in this skills component is more on facilitating effective problem-solving performance in the real world than on simply teaching effective problem-solving skills in session. In addition to reducing dysfunctional worrying directly, the strategy of increasing competent problem-solving experiences is also the most powerful way to strengthen and maintain a more positive problem orientation (Bandura, 1997; D’Zurilla & Nezu, 1999).

In closing, caution is needed when interpreting the relationships found in this study between social problem solving and worry. Because this is a correlational study, different interpretations are possible. According to the view presented here, social problem solving and worry are overlapping constructs. Consistent with the cognitive avoidance theory of worry (Borkovec, Shadick, & Hopkins, 1991), these two constructs might be linked because they serve a common coping function—to reduce or avoid emotional distress associated with stressful problems (see also Stöber et al., 2000). Unfortunately, the present findings suggest that the problem-solving component of worry is mostly dysfunctional, which is likely to exacerbate stress and anxiety instead of reducing it. On the other hand, a possible alternative interpretation of the present findings is that social problem solving and worry are causally related. According to this view, social problem-solving processes such as negative problem orientation and impulsivity/carelessness style may influence worrying and/or worrying may influence social problem solving. Future experimental, prospective, and longitudinal studies are needed to shed more light on this issue. For example, in one recent experimental study, Davey et al. (1996) found that a manipulation designed to reduce problem-solving confidence resulted in a subsequent increase in worrying. More studies of this kind are needed to examine causal relationships between other social problem-solving variables and worry.

Acknowledgements

The authors wish to acknowledge and thank Marvin R. Goldfried for his helpful comments on an earlier draft of this paper.

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