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Relations between problem-solving styles and psychological adjustment in young adults: Is stress a mediating variable?

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Abstract

To expand on previous research on problem-focused styles of coping in adults (Heppner, Cook, Wright, & Johnson, 1995), we examined the relations between problem-solving styles and psychological adjustment (viz., life satisfaction and psychological symptoms). We also tested to see if stress may account for any associations between problem-focused styles and psychological adjustment. As expected, problem-focused styles were found to be associated with psychological adjustment. However, using latent variable analyses, stress was not found to wholly mediate the associations between problem-focused styles and psychological adjustment. Reactive style was found to have a direct link with psychological symptoms. Overall, these findings point to the importance of considering problem-focused styles in studies of psychological adjustment.

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Keywords: Problem solving; Stress; Psychological adjustment

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0. Introduction

Over the past several decades, researchers have found a significant link between problem solving and various measures of psychological adjustment (D’Zurilla, 1986; D’Zurilla & Maydeu-Olivares, 1995; Heppner, 1988; Heppner & Peterson, 1982; Nezu, Nezu, & Perri, 1989; Spivack, Platt, & Shure, 1976; Tisdelle & St. Lawrence, 1986; see Chang, D’Zurilla, & Sanna, 2004, for a review). For example, Nezu and Ronan (1988) found that greater problem-solving deficits were related to greater depressive experiences. Similarly, Nezu (1986) found that increased problem-solving deficits were associated with increased anxiety. In addition, other studies have found a positive association between problem-solving deficits and suicide risk. For example, Dixon, Heppner, and Anderson (1991) found that greater problem-solving deficits were associated with greater suicide ideation and with greater hopelessness. Hence, overall, greater problem-solving deficits have been consistently found to be associated with greater levels of psychological symptomatology.

1. Problem-solving styles as individual differences variables

To date, there is still no generally accepted definition or measure of problem solving. Not surprisingly, a number of different models and measures have been proposed or developed (D’Zurilla & Maydeu-Olivares, 1995). One promising and comprehensive model that has been proposed by Heppner et al. (1995) is based on the conceptualization of problem solving as an important personality variable “involving cognitive, behavioral, and affective coping activities aimed at altering the cause of a stressful problem” (p. 280). Results of a factor analysis of items based on this definition resulted in the development of the problem-focused style of coping (PF-SOC) instrument, which assesses for three distinguishable problem-solving styles, namely, reflective, reactive, and suppressive problem-solving styles. The PF-SOC has been used to assess for problem solving in adults in a number of recent studies (Getty, Watson, & Frisch, 2000; Neville, Heppner, & Wang, 1997; Srivastava & Sager, 1999; Tacón, McComb, Caldera, & Randolph, 2003).

Reflective Style involves a cognitive-affective dimension associated with systematic efforts to deal with problems. *Reactive Style* reflects a cognitive-behavioral-affective dimension involving impulsive and often distracting efforts that hamper problem solving. Similarly, *Suppressive Style* involves a cognitive-behavioral-affective dimension that also hampers problem-solving progress due to one’s efforts to deny or avoid problems.

As expected, Heppner et al. (1995) found significant associations between these problem-solving styles and various measures of psychological adjustment, including anxiety, depression, and other psychological symptoms. For example, these researchers found that elevations on reactive and suppressive styles were related to greater experiences of psychological symptoms. Importantly, these investigators found that reactive and suppressive styles also accounted for a significant amount of variation in psychological symptoms even after controlling for the variance in symptoms accounted for by two widely used measures of problem solving and coping, namely, the problem-solving inventory (Heppner, 1988) and the coping strategies inventory (Tobin, Holroyd, Reynolds, & Wigal, 1989). Thus, Heppner et al.’s (1995) model and measure of

problem-solving styles appear to be both comprehensive and useful for predicting psychological adjustment.

2. Problem-solving styles, stress, and psychological adjustment

For most young adults, college represents a key transitional period with its own sources of stress and potential for growth. College, a time of transition into adulthood and important decision-making for the future, is indeed stressful. The college experience for many young adults is markedly different from that of high school. It brings separation from home and parents, increased academic demands, and questions of personal identity and career choice. For example, Dunkel-Schetter and Lobel (1990) found that students experience high levels of stress in the domains of friendships, romantic relationships, family relationships, financial affairs and academic work. In turn, stress has been linked to a variety of negative conditions in young adults, including emotional distress (Oaten & Cheng, 2005), social dysfunction (Morrison & O'Connor, 2005), and even heightened suicidal risk (Wilburn & Smith, 2005).

Given the potential impact and function of stress experiences in the lives of many young adults, it may be that past associations linking problem-solving styles to psychological adjustment may be due more directly to stress experiences than to problem-solving styles. As illustrated in Fig. 1, it may be that the links between problem-solving styles and psychological adjustment are fully mediated through stress. There are several reasons for considering such a possibility. First, according to Heppner et al.'s (1995) conceptualization, problem solving is expected to have an important influence on people's experience of stress. For example, coping with problems reactively often will likely increase, not decrease, stress experiences for most adults. Second, the notion that problem solving is associated with stressful experiences has received empirical support. For example, Neville et al. (1997) found that scores on the PF-SOC were significantly correlated with a measure of stress in college students. Moreover, D'Zurilla and Sheedy (1991) found that problem solving (using a different measure) predicted stress levels at three months even after controlling for initial stress experiences. Third, studies have shown that an association exists between stress and psychological adjustment. For example, studies have found that stress is associated with depressive symptoms (e.g., Billings & Moos, 1982), anxious symptoms (e.g., Nezu, 1986), and greater suicide ideation (e.g., Bonner & Rich, 1988). Finally, a number of studies have shown that stress often mediates the link between personality process variables and psychological adjustment. For example, recent studies have shown that stress partially mediates the relationship between perfectionism and psychological adjustment (e.g., Chang, 2000; Chang, Watkins, & Banks, 2004).

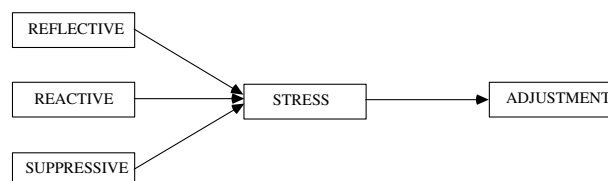


Fig. 1. A model in which the links between problem-solving styles and psychological adjustment exit through stress.

Beyond an examination of whether and how problem-solving styles may be associated with psychological adjustment via stress experiences, it is important to note that most studies on problem solving, including those involving the PF-SOC, have focused almost exclusively on negative psychological conditions (e.g., psychological symptoms, depression). Accordingly, it is unclear how problem solving relates to important positive psychological conditions, such as life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985). Although based on Heppner et al.'s (1995) model, one might speculate that greater reflective thinking would be associated with greater life satisfaction, whereas reactive and suppressive styles would each be related negatively with life satisfaction, there is a need to test these relations empirically. As noted by Folkman and Moskowitz (2000), a major reason that more progress has not been made in research on coping over the past 30 years has been due to the almost exclusive focus on negative conditions.

3. Purpose of the present research

To expand on previous research on problem-solving styles, the main purpose of our study was to: (a) examine the bivariate relations between problem-solving styles, stress, and psychological adjustment (viz., life satisfaction and psychological symptoms) in young adults; and (b) determine the extent to which relations between problem-solving styles and psychological adjustment are mediated by stress. In general, consistent with previous research, we predicted that problem-solving styles would be significantly related to stress and psychological adjustment (e.g., stronger reactive style was expected to be associated with greater stress and psychological symptoms). However, we anticipated that some problem-solving styles might be more strongly related to some variables than to others. For example, as suggested earlier, we expected that the relations between reactive and suppressive styles with psychological symptoms would be stronger than the relation between reflective style and psychological symptoms. Furthermore, insofar as stress is often believed to represent a powerful proximal determinant of adjustment for young adults, we expected stress to mediate some of the associations between problem-solving styles and psychological adjustment.

4. Method

4.1. Participants

A total of 264 college students from a mid-sized Midwestern university participated in the present study. All study measures were administered to all 264 college student participants in the form of a take home survey.

4.2. Measures

4.2.1. Problem-solving styles

The Problem-Focused Style of Coping (PF-SOC; Heppner et al., 1995) is a 18-item multi-dimensional measure of problem solving consisting of the following three scales: Reflective Style

(e.g., “I consider the short-term and long-term consequences of each possible solution to my problems”), Reactive Style (e.g., “My old feelings get in the way of solving current problems”), and Suppressive Style (e.g., “I avoid even thinking about my problems”). Respondents are asked to rate how often they engage in each item across a 5-point Likert-type scale ranging from 1 (*almost never*) to 5 (*almost all of the time*). In general, higher scores on Reactive and Suppressive Styles scales, and lower scores on Reflective Style indicate greater problem-solving deficits. Evidence for the construct validity and utility of the PF-SOC scales have been reported in Heppner et al. (1995). Test-retest reliabilities (3 weeks) for the PF-SOC scales have ranged from .65 (Suppressive Style) to .71 (Reactive Style).

4.2.2. *Stress*

The perceived stress scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) is a 14-item measure of self-appraised life stress (e.g., “In the last month, how often have you been upset because of something that happened unexpectedly?”). Respondents are asked to rate the frequency of these items across a 5-point Likert-type scale ranging from 0 (*never*) to 4 (*very often*). Higher scores reflect greater perceived stress in the last month. Evidence for construct validity of the PSS with life events measures has been reported in Cohen et al. (1983). Test-retest reliability (6 weeks) for the 14-item PSS has been reported to be .55 (Cohen et al., 1983).

4.2.3. *Life satisfaction*

Life satisfaction was assessed by the satisfaction with life scale (SWLS; Diener et al., 1985). The SWLS is a 5-item measure of global life satisfaction (e.g., “I am satisfied with my life”), or a person’s satisfaction with life as a whole, rather than any specific domain. Respondents are asked to rate the extent of their agreement to these items across a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores on the SWLS reflect greater life satisfaction. Test-retest reliability (8 weeks) for the SWLS scale has been reported to be .82 (Diener et al., 1985).

4.2.4. *Psychological symptoms*

Psychological symptoms were assessed by the symptoms checklist-90-revised (SCL-90-R; Derogatis, 1983). The SCL-90-R is a 90-item self-report measure of psychological symptomatology. Respondents are asked to rate the extent to which they have been troubled *during the past week, including today*, by specific psychological symptoms (e.g., “Feelings of being trapped or caught”) across a 5-point Likert-type scale ranging from 0 (*not at all*) to 4 (*extremely*). Because research has indicated that the SCL-90-R is best regarded as a general distress measure when used with non-clinical populations (for a review, see Cyr, McKenna-Foley, & Peacock, 1985), the present research employed only a single summary score for this measure. Test-retest reliability (2 weeks) using this summary score has been reported to be .90 for a shorter form of the SCL-90-R (see Derogatis & Melisaratos, 1983).

4.3. *Procedure*

The present sample was composed of 263 (102 men and 161 women) young adult participants, with a mean age of 20.30 (SD = 3.01) years (ranging from 18 to 33 years). Participants were not

made aware of the purpose of the study until after the study was completed. To protect the participants' anonymity, only participant numbers were placed on the instruments. In addition, all participants signed consent forms that indicated that all test data would be kept strictly confidential.

5. Results

5.1. Relations between problem-solving styles, stress, and psychological adjustment in young adults

Zero-order correlations and internal consistency reliabilities for all study measures for young adult samples are presented in Table 1. As the table shows, scores on stress were significantly related in the expected direction to scores on reflective, reactive, and suppressive styles, accounting for approximately 11%, 31%, and 27% of the variance in these measures, respectively. The significant correlations between scores on the PF-SOC scales and the PSS are consistent with the notion that poorer problem solving is associated with greater stress. In addition, each of the problem-solving styles was significantly related to each of the two psychological adjustment measures. Specifically, reflective style was associated with greater life satisfaction and less psychological symptoms, whereas reactive and suppressive styles were associated with less life satisfaction and greater psychological symptoms.

In general, the magnitude of the associations between reflective style and psychological symptoms appeared to be much weaker than the associations found between the two remaining dysfunctional problem-solving styles and psychological symptoms. However, to examine these observations for psychological symptoms as well as for stress and life satisfaction more critically, we conducted a series of tests examining for the difference between dependent r 's (Steiger, 1980). Results of these analyses indicated that the relation between stress and reflective style was significantly weaker than the relation between stress and reactive style, $t(260) = -3.78$, $p < .01$ (two-tailed), and significantly weaker than the relation between stress and suppressive style, $t(260) = -2.92$, $p < .01$. Likewise, the relation between life satisfaction and reflective style was weaker than the relation between life satisfaction and reactive style, $t(260) = -2.10$, $p < .05$,

Table 1
Zero-order correlations between measures of problem solving, stress, and psychological adjustment

Measures	1	2	3	4	5	6
1. Reflective style	–					
2. Reactive style	-.34**	–				
3. Suppressive style	-.23**	.68**	–			
4. Stress	-.33**	.56**	.52**	–		
5. Life satisfaction	.21**	-.35**	-.35**	-.58**	–	
6. Psychological symptoms	-.26**	.54**	.50**	.50**	-.45**	–
<i>M</i>	20.45	15.05	14.42	24.06	24.06	74.44
<i>SD</i>	4.07	3.99	3.63	6.32	6.50	56.29
α	.84	.77	.76	.77	.92	.98

Notes. $N = 263$.

* $p < .01$. ** $p < .001$.

and weaker than the relation between life satisfaction and suppressive style, $t(260) = -2.10$, $p < .05$. Furthermore, the relation between psychological symptoms and reflective style was weaker than the relation between psychological symptoms and reactive style, $t(260) = -4.61$, $p < .01$, and weaker than the relation between psychological symptoms and suppressive style, $t(260) = -3.57$, $p < .01$. Respective associations comparing reactive style and suppressive style were not found to be different from each other for young adults.

5.2. Modeling problem-solving styles, stress, and psychological adjustment

To further test the hypothesized models, we conducted latent variable analyses (Bollen, 1989) of the data obtained for young adults. Analyses were conducted using LISREL 8.20 (Jöreskog & Sörbom, 1998). The results of our analyses showing the standardized path coefficients within models for young adults are depicted in Fig. 2. Within each model, hypothesized paths among the latent constructs are represented by single-arrowed lines, and correlations among the exogenous variables are represented by curved double-arrowed lines. Also within each model, to correct for potential unreliability of the measures, the error terms were set equal to the product of (1-the estimated reliability of the measure) – the variance of the measure (as detailed in Bollen, 1989). Coefficients significant at $p < .05$ are indicated by solid lines in the figures, whereas dashed lines indicate those coefficients that are not significant at that level.

The overall model for young adults depicted in Fig. 2 fit the data well, $\chi^2(5) = 2.91$, $p = .71$, GFI = 1.00, IFI = 1.00. As Fig. 2 indicates, there was no unique relation between reflective style and stress. The same result was found for suppressive style. However, although reactive style was not found to have a unique relation with stress, it was found to have a positive relation with psychological symptoms. Stress was related to lower life satisfaction and greater psychological symptoms. The high degree of model fit additionally suggests that important paths have not been omitted.

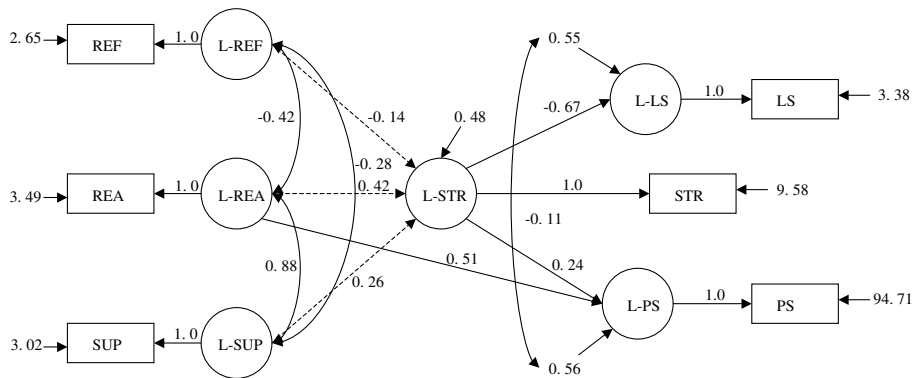


Fig. 2. Results of the latent variables analysis examining a model of problem-solving styles, stress, and psychological adjustment among young adults ($N = 263$). REF = Reflective Style Measured; L-REF = Reflective Style Latent; REA = Reactive Style Measured; L-REA = Reactive Style Latent; SUP = Suppressive Style Measured; L-SUP = Suppressive Style Latent; STR = Stress Measured; L-STR = Stress Latent; LS = Life Satisfaction Measured; L-LS = Life Satisfaction Latent; PS = Psychological Symptoms Measured; L-PS = Psychological Symptoms-Latent. Dashed lines indicate non-significant paths. All remaining paths are significant ($p < .05$).

6. Discussion

Our research sought to extend previous research and theory on problem solving by examining the relations between problem-solving styles, stress, and psychological adjustment in young adults. As in prior research (e.g., Bonner & Rich, 1988; Heppner et al., 1995), we found problem-solving deficits (as indicated by lower scores on Reflective Style, and higher scores on Reactive and Suppressive Styles) were associated with significantly greater psychological symptoms and less life satisfaction. Building upon previous research, however, the association between reflective style and stress was found to be weaker than those involving reactive and suppressive styles. A similar pattern emerged for reflective style as compared to the two dysfunctional problem-solving styles and their associations with life satisfaction and psychological symptoms. These findings are consistent with the possibility that clinical interventions aimed at reducing psychological symptoms and stress and increasing life satisfaction, should include fostering of greater reflective style and minimizing of reactive and suppressive styles.

Previous research on problem solving has pointed to the possible value of examining a model linking problem-solving styles and psychological adjustment through stress (e.g., D’Zurilla & Sheedy, 1991). Accordingly, we conducted a latent variable analysis to examine a hypothesized mediation model. To control for overlap between the three different problem-solving styles, we correlated the latent problem-solving variables in conducting these analyses. Results of latent variable analyses provided limited support for mediation. For example, none of the three problem-solving styles was found to be significantly related to stress in this group. However, reactive style, independent of the other two problem-solving styles, was found to be directly related to psychological symptoms.

The results of these findings have important implications for clinical interventions. These findings show that stress plays an important and direct role in life satisfaction and psychological symptoms, while problem-solving styles play an indirect role through stress. The one exception to this is found with reactive style, which has a direct relationship to psychological symptoms. With regard to clinical interventions, the present findings suggest that reducing stress experiences may play an important role in reducing psychological symptoms and increasing life satisfaction. The findings also suggest that increasing the use of reflective style, while decreasing the use of suppressive style may help to reduce stress experiences, which in turn may lead to greater life satisfaction and lower psychological symptoms. In contrast, the present findings indicate that there may be direct benefits on psychological symptoms by working to minimize the use of reactive style in young adults.

6.1. *Some potential limitations of our research*

Some potential limitations of our research may be mentioned. First, it would be valuable to examine the relations between the present set of variables in more diverse populations. As some studies have shown, there may be differences in the expression of problem solving as well as in the nomological net of associations involving problem solving across the life-span (D’Zurilla, Maydeu-Olivares, & Kant, 1998) and different racial/ethnic groups (Chang, 1998; Chang & Banks, in press).

Second, given the cross-sectional design of the present study, one cannot draw strong inferences about cause and effect. Although we were interested in examining a particular model involving problem-solving styles, stress, and psychological adjustment based on prior research and theory, other models could have been considered (e.g., psychological adjustment as an antecedent to problem-solving styles). No doubt, a prospectively designed study that assesses all of the present measures across time would help greatly clarify the direction of the hypothesized causal relations between problem-solving styles, stress, and psychological adjustment. Finally, given that our study focused on young adults, it is not clear if the present findings can be generalized to older adults. Some studies have shown that problem solving differs between young and more mature adults (Chang, D’Zurilla et al., 2004).

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