

GENDER ROLE CONFLICT, PROBLEM-SOLVING APPRAISAL, AND THE
PSYCHOLOGICAL FUNCTIONING OF FIREFIGHTERS

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Doctor of Philosophy

by

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GENDER ROLE CONFLICT, PROBLEM-SOLVING APPRAISAL, AND THE
PSYCHOLOGICAL FUNCTIONING OF FIREFIGHTERS

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ABSTRACT

The purpose of this study was to evaluate the mediational relationship between gender role conflict, problem-solving appraisal, and psychological functioning in firefighters. Participants were 95 male firefighters from a municipal fire department in the Midwest. Measures included the Gender Role Conflict Scale (O'Neil, Helms, Gable, David, & Wrightsman, 1986), Problem Solving Inventory (Heppner, 1988; Heppner & Petersen, 1982), and the Outcome Questionnaire-45.2 (Lambert et al., 2004). Using the methods of Baron and Kenny and colleagues (Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998), regression analyses identified gender role conflict as a significant partial mediator between problem-solving appraisal and psychological functioning. The results provide several implications for understanding problem-solving appraisal and gender role conflict as well as for working with firefighters and similar occupations.

INTRODUCTION

There are over one million firefighters in the United States who serve urban and rural communities by routinely risking their lives, suffering both physical injury and psychological strain. Firefighters are expected to act in superhuman or heroic manners by enduring physical risks, while also being psychologically and emotionally stoic in the face of trauma and other stressors. The majority of firefighter research has been based on trauma response conducted on mixed-samples of emergency personnel, resulting in inconclusive findings about the type and level of psychological distress identified in firefighters (Del Ben, Scotti, Chen, & Fortson, 2006; Hagh-Shenas, Goodarzi, Dehbozorgi, & Farashbandi, 2005; Nixon, Schorr, Boudreaux, & Vincent, 1999). These results suggest that the psychological risk of firefighting may not necessarily lead to poor psychological outcomes (Beaton, Murphy, Pike, & Jarrett, 1995; North et al., 2002), making the first purpose of this study to identify the psychological functioning of firefighters.

These inconclusive findings also allude to individual variables having an important impact on psychological outcomes. Inconsistent with trauma focused research, firefighters are more likely to be exposed to routine traffic accidents than large scale events and have been identified to experience similar stress responses from large and small scale events (Clohessy & Ehlers, 1999; Marmar, Weiss, Metzler, Ronfeldt, & Foreman, 1996). Identifying individual variability of firefighters within the context of daily stressors may provide more accurate information concerning psychological outcomes. Because of the nature of the job and work environment, two individual

variables that are likely to be important in understanding differences in psychological outcomes of firefighters are (a) male gender role conflict and (b) coping in the form of problem-solving appraisal.

Firefighting is a traditionally male-dominated field, historically viewed as representing traditional masculinity and valuing traditional masculine characteristics such as risk taking, courage, and self-reliance (Kirschman, 2004). Firefighters are team-oriented and experience intense-socialization in working and living together, which makes them susceptible to the reinforcement of traditional masculine beliefs of rigid gender roles and makes gender role conflict particularly salient (Kirschman, 2004; Scott & Myers, 2005). According to O’Neil (2008), gender role conflict “takes place when rigid, restrictive and sexist gender roles result in restriction, devaluation, or violation of others or oneself” (p. 362). Gender role conflict is measured by the Gender Role Conflict Scale (GRCS: O’Neil, Helms, Gable, David, & Wrightsman, 1986) that includes four factors relevant to firefighters: (a) Success, Power, Competition Issues (SPC), (b) Restrictive Emotionality (RE), (c) Restrictive Sexual and Affectionate Behavior Between Men (RABBM), and (d) Conflict Between Work and Leisure—Family Relations (CBWFR). The majority of the gender role conflict literature supports a relationship between gender role conflict and psychological dysfunction in the form of depression, anxiety, stress, substance abuse, and physical and psychological strain (Stillson, 1988), and problematic coping (see O’Neil, 2008; Bergen, 1997; BIRTHISTLE, 1999; Jones, 1998; Stanzione, 2005; Strom, 2004; Wester, Kuo, & Vogel, 2006). Consistent with gender role conflict, it is likely that norms and roles upheld in the career are contradictory to life outside of the fire station. As a result, firefighters are susceptible to experiencing

psychological distress related to gender-role conflict, apart from other stressors of the job such as exposure to trauma.

However, although numerically limited, some studies have not found a significant relationship between gender role conflict and negative psychological outcomes (see O'Neil, 2008), while Good and colleagues (2006) found that some aspects of gender role conflict were related to better improvement in men suffering from physical injuries. In addition, Levant (1995) identified several ways in which gender role socialization may be beneficial, such as enduring hardship and pain. Consistent with these findings, it is possible that there are aspects of the endorsement of a traditional male gender role that may be beneficial for firefighters. For example, the controlling of emotions may be beneficial during an emergency, but the same coping mechanism utilized in personal relationships may be counterproductive. Currently, no research has been conducted on firefighters using gender role conflict as a masculinity framework, making the actual occurrence and effects of gender role conflict among this population unknown.

Therefore, the second purpose of this study is to both identify and determine the association of gender role conflict on psychological outcomes for firefighters, whereby identifying if gender role conflict is negatively associated with psychological functioning in firefighters.

Furthermore, coping style of firefighters is also important for understanding the variability in psychological outcomes. Individuals in this career have been identified as using mechanisms of coping consistent with the endorsement of traditional gender roles, including controlling emotions and alcohol use (Dyregrov & Mitchell, 1992; North et al., 2002; Scott & Myers, 2005; Stuhlmiller, 1994). Contrary to such traditionally masculine

coping, the majority of firefighter studies have utilized more emotion-focused frameworks such as Lazarus & Folkman's (1984) cognitive transactional theory of coping (e.g., Black, 1997; Brown, Mulhern, & Joseph, 2002; Chang et al., 2003; Dudek & Koniarek, 2003). Although sharing some theoretical commonalities, problem-solving appraisal is a frequently used method of assessing coping that is composed of beliefs or expectancies about problem-solving abilities (Heppner, Witty, & Dixon, 2004). Problem-solving appraisal is likely more applicable to firefighters in being more closely related to problem-focused rather than emotion-focused coping. In addition, there is an established relationship between positive problem-solving appraisal and high levels of instrumentality, likely to be particularly valued in a traditionally masculine oriented group (see Heppner et al., 2004). Thus, the use of problem-solving appraisal is deemed a more appropriate way for evaluating coping in firefighters.

The Problem-Solving Inventory (PSI: Heppner, 1988; Heppner & Petersen, 1982) is a measure of global problem-solving appraisal and thus seemingly relevant in evaluating the overall coping of firefighters in their daily activity (Heppner et al., 2004). The PSI contains three factors (a) Problem-Solving Confidence (PSC), (b) Approach-Avoidance Style (AAS), and (c) Personal Control (PC) that are used to indicate the type of problem-solving appraisal endorsed. Ineffective problem-solving, as measured by the PSI, has been associated with several aspects of psychological functioning including psychological maladjustment, depression, anxiety, substance abuse, and general physical health problems that are relevant for firefighters (see Heppner et al., 2004). In addition, a study of United Kingdom firefighters found a relationship between ineffective social-problem solving and psychological distress (Baker & Williams, 2001). With such

consistent associations, investigating the problem-solving appraisal of firefighters has implications for identifying a source of individual variability in psychological outcomes of firefighters and potentially impacting these outcomes. Whereas problem-solving appraisal is deemed a more culturally appropriate approach to evaluating coping in firefighters, there is currently no published literature that evaluates problem-solving appraisal (using the PSI) in a sample of firefighters. Therefore, the third purpose of this study is to identify the problem-solving appraisal of firefighters and effects through the hypothesis that effective problem solving will be associated with greater psychological functioning.

Furthermore, the relationship between gender role conflict and problem-solving appraisal is critical for gaining a more complete picture of how each of these variables contributes to psychological functioning. In the only published study to concurrently use the GRCS and PSI, the PSI accounted for a significant portion of the variance of measures of anxiety and depression, while the GRCS only accounted for approximately one percent of the psychological outcome variance (Good, Heppner, DeBord, & Fischer, 2004). In addition, Restrictive Emotionality (RE) was significantly related to two PSI factors: Approach-Avoidance Style (AAS) and low Problem-Solving Confidence (PSC). This study highlights the potential negative impact of gender role conflict on problem-solving appraisal, but also indicates the potential for problem-solving appraisal to have a greater impact on psychological outcomes than gender role conflict. However, with limited gender role conflict and problem-solving appraisal research, as well as no previous studies in a sample of firefighters, it is unclear how these variables relate to each other and to psychological functioning in firefighters. As a result, the third purpose of this

study is to determine whether gender role conflict is related to ineffective problem-solving appraisal.

There is a recognized need within the literature to evaluate the GRCS and PSI in more complex, multilevel designs. Good et al. (2004) argued that third variables need to be investigated that further explain the relationship between gender role conflict and psychological problems, while Heppner (1995) and O'Neil (2008) recognize the need for studies to investigate possible mediating and moderating variables. O'Neil (2008) has agreed with critics that mediation studies are the next progressive step in understanding the complexity of gender role conflict and recommended evaluating gender role conflict within different interpersonal contexts, such as work or career environments, and in connection to career choice and development more generally (Heppner & Heppner, 2008). Furthermore, Heppner and colleagues (2004) identified the need for more studies that evaluated the PSI and gender-related variables. Whereas gender role conflict is likely a predictor of psychological functioning, it is also a potentially promising mediating variable between problem-solving appraisal and psychological distress. Establishing and understanding how problem-solving appraisal not only impacts psychological functioning, but is also being influenced by gender role conflict in this relationship is likely to be beneficial to firefighters. For example, those providing psychological services to firefighters may not only target how they are coping or approaching solving problems, but may also target masculine beliefs such as those identified in gender role conflict. These areas of gender role conflict may be inhibiting problem-solving from being effective or inhibiting psychological functioning more broadly. Consequently, the final

purpose of this study is to examine the role of gender role conflict as a potential mediating variable between problem-solving appraisal and psychological functioning.

METHODS

This methods section will consist of four separate parts: (a) participants, (b) instruments and psychometric properties, (c) data collection procedures and (d) statistical models and analyses. First, information about study participants will be provided. Second, all instruments and the details about psychometric properties for each construct will be outlined. The Gender Role Conflict Scale (GRCS: O'Neil et al., 1986) will be used to measure gender role conflict. The Problem-Solving Inventory (PSI: Heppner, 1988; Heppner & Petersen, 1982) will be used to assess problem-solving appraisal. The Outcome Questionnaire-45.2 (OQ-45: Lambert et al., 2004) will be used to measure psychological functioning. Third, data collection procedures will be provided. Finally, the four hypotheses and aims in this study will be discussed.

Participants

The participants were male career firefighters (N = 95) from a Midwestern city (population 90,000) who were serving in active duty on all three shifts of a municipal fire department. A nonrandom sample consisting of all of the male firefighters and officers working for the department who attended the mandatory training sessions were recruited for the study, resulting in 100 percent participation of eligible participants (N = 105). Of those participants, incomplete male participant surveys (N = 4) and all female surveys (N = 5) were not included in the data set. The data set was evaluated for outliers by calculating the Mahalanobis distance. One participant was removed from the data set for exceeding the critical value of 11.345 with the alpha level set at .01, resulting in the final participant number (N = 95).

The mean age of participants was 37 years ($M = 37.3$, $SD = 8.34$), with a range of 23 to 57 years. Approximately one-third (31.3%) of the sample were officers (i.e. Lieutenant or higher) and two-thirds (68.8%) were firefighters or engineers, ranging in years of experience from 6 months to 35 years ($M = 12.70$, $SD = 7.33$). The majority of participants were either married or in a long-term relationship (80.2%). Both weekly alcohol use ($M = 4.52$, $SD = 5.44$) and cigarette use ($M = 3.19$, $SD = 18.97$) had a wide usage range, from 0 to 30 drinks and 0 to 140 cigarettes (see Table 1).

Measures

Demographics

The participants completed a demographic form that requested information on age, sex, relationship status, years of experience as a firefighter (both career and volunteer), rank in the department, and weekly alcohol and cigarette usage. Because of the small number of racial/ethnic minorities within the sampled fire department, participants were not asked to identify their race/ethnicity. Of important note, 84 percent of firefighters nationally are Caucasian and share a similar age range for active duty firefighters as the recruited sample (Kirschman, 2004). As another means of ensuring anonymity, rank was identified through a forced dichotomy (i.e., officer, firefighter/engineer). Sex was not used in the formal analyses, but only as a means of identifying female fire personnel to be removed from participation in the study.

Gender Role Conflict

The Gender Role Conflict Scale (GRCS; O'Neil et al., 1986) consists of 37 statements originally designed to assess masculine role conflict. Each statement is scaled on a 6-point Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree). Higher

scores indicate greater masculine role conflict, while lower scores indicate less masculine role conflict. Several confirmatory factor analyses have supported four factors: (a) Success, Power, Competition Issues (SPC; “I worry about failing and how it will affect me as a man”) (13 items), (b) Restrictive Emotionality (RE; e.g., “Strong emotions are difficult for me to understand”) (10 items), (c) Restrictive Sexual and Affectionate Behavior Between Men (RABBM; e.g., “Expressing my emotions to other men is risky”) (4 items), and (d) Conflict Between Work and Leisure—Family Relations (CBWFR; e.g., “My career, job, or school affects the quality of my leisure time or family life) (6 items) (see O’Neil, 2008 for full factor analysis review). For the purpose of this study, an abbreviated version of the RABBM factor (with four questions about homosexual relationships omitted) was used. This abbreviated version of 33 items was initially used by Good and colleagues (2006) to study participants from a similar social background as current participants and is consistent with recommendations made by consulted firefighters.

The GRCS exhibits good reliability and validity. Test-retest reliability done over a one month period ranges from .72 to .86 (Faria, 2000; O’Neil et al., 1986). Internal consistency for college student samples ranges from .79 to .89 and .71 to .91 for more diverse samples (O’Neil, 2008). Coefficient alpha identified good reliability for the GRCS factors. SPC ranges from .83 to .84, RE ranges from .81 to .91, RABBM at .83, and CBWFR ranges from .70 to .80 (Chamberlin, 1993; Good et al., 1995), while Good and colleagues (2006) found a coefficient alpha of .76 for the abbreviated RABBM. Construct validity has been supported by low correlations with social desirability and sex role egalitarianism, while being moderately correlated with other masculinity measures

(O'Neil, 2008). For this study, Cronbach's alpha identified high reliability for the GRCS at .94 and a range of .86 to .91 for the four GRCS factors.

Problem-Solving Appraisal

The Problem-Solving Inventory (PSI; Heppner, 1988; Heppner & Petersen, 1982) is a 32-item instrument that measures perceptions of problem-solving behaviors and problem-solving attitudes. Each statement of the PSI is scaled on a 6-point Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree), with low scores indicating assessment of self as an effective problem solver and high scores indicating assessment of self as an ineffective problem solver. The PSI consists of three factors: (a) Problem Solving Confidence (PSC; e.g., "When faced with a novel situation, I have confidence that I can handle problems that may arise") (11 items), (b) Approach-Avoidance Style (AAS; e.g., "When making a decision, I weigh the consequences of each alternative and compare them against each other") (16 items), and (c) Personal Control (PC; e.g., "Even though I work on a problem, sometimes I feel like I am groping or wandering and am not getting down to the real issue") (5 items). Because of the vast use of the PSI, normative data is available on a range samples. A normal adult sample exhibited a total PSI score of approximately 77 ($M = 76.9$, $SD = 22.9$), with factor scores: PSC approximately 22 ($M = 21.8$, $SD = 8.6$), AAS approximately 40 ($M = 40.2$, $SD = 11.5$), and PC approximately 15 ($M = 14.9$, $SD = 6.2$) (Heppner, 1988).

Over 120 empirical studies have provided strong validity and reliability estimates for the PSI. Coefficient alphas across various samples range from .72 to .90 and test-retest correlations over two week to two year intervals range from .60 to .80 (e.g., Heppner, 1988; Heppner et al., 2004). In addition, the three PSI factors have also

exhibited good internal consistency reliability with PSC ranges from .78 to .85, AAS ranges from .84 to .90, and PC ranges from .72 to .74 (Heppner, 1988). For this study, Cronbach's alpha exhibited high reliability at .90 for the PSI and good reliability, ranging from .81 to .86, for the three PSI factors.

Psychological Functioning

The Outcome Questionnaire-45.2 (OQ-45; Lambert et al., 2004) consists of 45 items used as a measure of an individual's current level of distress and is often used to monitor patient progress in therapy. Items are scored on a 5-point Likert scale ranging from 0 (Never) to 4 (Almost Always). The total score is computed by adding the participants' responses from all 45 items, resulting in scores ranging from 0-180. Higher scores on both the total OQ-45 and factors are indicative of greater psychological distress and lower psychological functioning.

Normative data for the OQ-45 has been derived from a range of populations, including undergraduate students, community members, employee assistance programs (EAP), outpatient clinics, and inpatient units. There are no known published studies on the use of the OQ-45 in a sample of firefighters/EMS workers. Lambert and colleagues (2004) reported normative means for both OQ-45 total scores and subscale scores. Normative means for OQ-45 total scores for males in a community sample are approximately 49 ($M = 49.2$, $SD = 17.59$) and for males enrolled in an employee assistance program (EAP) are approximately 74 ($M = 73.52$, $SD = 21.87$).

The OQ-45 has consistently exhibited good reliability and validity in different samples. The OQ-45 has exhibited high test-retest reliability of .84 in students and internal consistency of .93 in both student and patient samples (Lambert et al., 2004).

Concurrent validity coefficients for the total OQ-45 score range from .71 to .88 in outpatient and inpatient samples respectively. For this study, Cronbach's alpha exhibited high reliability at .90 for the OQ-45 total scale score. Due to the low range of validity coefficients for the subscales, Lambert and colleagues (2004) suggested the OQ-45 as a total score is more reliable for measuring psychological functioning and thus OQ-45 subscales will not be used in the analyses of this study.

Procedures

Procedures used for the data collection closely resembled those used by Varvel and colleagues (2007) on a similar sample of firefighters. The training chief of the fire department granted permission for data to be collected from all three shifts during mandatory training sessions. After receiving approval from the Institutional Review Board at the University of Missouri, data was collected at the beginning of the morning and afternoon training sessions over the course of three days. Female administrators passed out questionnaire packets and informed consent forms to each firefighter. To prevent the potential impact of order effects on responses, two different forms of the instrument packet were distributed in unmarked envelopes. The questionnaires took approximately 20-30 minutes to complete.

At the outset of data collection, the administrators described the purpose of the study as a general inquiry into the experience of firefighters, that participation was completely voluntary, and that all participant responses were completely anonymous. The firefighters were also informed that if they did not wish to participate, they could place the uncompleted survey into the provided envelope. This further ensured that individuals were able to remain anonymous, among both the researchers and their peers.

Questionnaire packets were given to both female and male participants, with the intention of increasing the likelihood of honest responses and not singling out one sex in the peer group. Female surveys (N=5) were destroyed and not included in the data analyses. In addition, participants were informed that they would receive ice cream delivered to their station after dinner for their participation. To allow participants to remain anonymous in their responses, each station received a proportion of ice cream based on the number of surveys completed during each training session (approximately 20 gallons).

Hypotheses

This study sought to determine whether gender role conflict (as measured by the GRCS) mediates the relationship between problem-solving appraisal (as measured by the PSI) and psychological functioning (as measured by the OQ-45). In testing this model, the following hypotheses were evaluated:

Hypothesis #1: Greater problem-solving appraisal (as measured by the PSI) will be positively related to psychological functioning (as measured by the OQ-45)

Hypothesis #2: Lower problem-solving appraisal (as measured by the PSI) will be related to greater gender role conflict (as measured by the GRCS)

Hypothesis #3: Psychological distress (as measured by the OQ-45) will be associated with greater gender role conflict (as measured by the GRCS)

Hypothesis #4: Gender role conflict (as measured by the GRCS) will mediate the relationship between problem-solving appraisal (as measured by the PSI) and psychological functioning (as measured by the OQ-45)

As previously identified, there is a relatively small amount of empirical research on the general psychological functioning of firefighters and a lack of research using the PSI and GRCS with this population. Thus, this study sought to contribute to the literature by providing information on the problem-solving appraisal, gender role conflict, and psychological functioning as well as other descriptive information about firefighters.

RESULTS

Descriptive Statistics

Means, standard deviations, and zero order correlations were calculated for all demographic and scale variables (see Tables 1 and 2). The GRCS was positively related to age and the OQ-45 was inversely related to age, while the PSI was inversely related to age, years of experience, and rank. T-tests further indicated a significant difference in mean PSI scores between officers and firefighters/engineers, $t(93) = 4.21, p < .01$, with officers having scores that exhibited more effective problem-solving. This association suggests that adaptive problem solving (i.e. lower PSI scores) increases as firefighters' age, gain more experience, and obtain higher rank. Whereas this finding has potential importance for identifying the individual differences in firefighters according to rank, officers and firefighters were combined for the following analyses because: the rank grouping variable is somewhat arbitrary, the means only differ on the PSI score (not on other scale scores), and dividing the groups would significantly impact power. Finally, whereas there was a lot of variability in alcohol and cigarette use, there was no significant relationship between weekly alcohol and cigarette use with the PSI, GRCS, and OQ-45.

Firefighter PSI total and factor mean scores were comparable to normative data, whereas OQ-45 mean scores were higher than the community sample norm and more closely resembled clients seeking Employee Assistance services (Heppner, 1988; Lambert et al., 2004) (see Table 2). Pearson correlation analyses identified significant inverse relationships between GRCS and both PSI and OQ-45. In addition, there was also a significant positive relationship between PSI and OQ-45. Finally, there was no

significant differences in responses between Form A and Form B of the questionnaire packet, indicating instruments were not significantly impacted by order effects.

Test of Mediational Model

Based on the methods of Baron and Kenny and colleagues (Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998) outlined by Frazier and colleagues (2004), multiple regression was used to determine whether gender role conflict mediates the relationship between problem-solving appraisal and psychological functioning (see Figure 1). Assumptions for multiple regression analyses were tested and upheld for the proposed model. According to Frazier and colleagues (2004), a relationship between PSI and OQ-45 (path c) must first be established to test for the potential mediating relationship. OQ-45 was regressed on PSI, which indicated that PSI was a significant predictor of OQ-45, accounting for approximately 9 percent of the variance in psychological functioning ($R^2_{adj} = .085$). Second, GRCS was regressed on PSI (path a), which indicated that PSI was a significant predictor of GRCS, accounting for approximately 16 percent of the variance ($R^2_{adj} = .156$). After identifying a significant relationship between PSI and the OQ-45 (path c) as well as PSI and potential mediating variable GRCS (path b), multiple regression analyses were used to examine whether GRCS mediated the relationship between PSI and OQ-45. OQ-45 was regressed simultaneously on PSI and GRCS. GRCS was a significant predictor of psychological functioning (path b), while the PSI was no longer a significant predictor of OQ-45 (path c') (see Table 3).

To test for significance of the mediated, or indirect, effect of gender role conflict on the relationship between problem-solving appraisal and psychological functioning,

Kenny et al (1998) recommends dividing the mediated effect (i.e. product of path a and b) by the standard error (i.e. SE_{ab}) to obtain a z-score. In this study, $SE_{ab} = .0495$, yielding a z score of 2.57. The calculated z score is greater than 1.96 and therefore indicated a significant difference between paths c and c' ($p < .05$). Furthermore, Sobel test statistic (Sobel, 1982) was 2.62, $p < .01$, thereby supporting a significant difference between path c and c' (Preacher & Leonardelli, 2003). In sum, regression analyses and the Sobel test statistic both identified the relationship between problem-solving appraisal and psychological functioning was no longer significant when gender role conflict was included as a mediator in the analyses, compared to when it was not included in the analyses (see Frazier and colleagues, 2004). However, Pituch, Whittaker, and Stapleton (2005) warn against concluding there is full mediation based on a significant difference between paths c and c' or path c' being equal to zero, particularly because of the low power in both the Baron and Kenny (1986) and the Sobel (1982) methods. Based on the low level of power of the analysis methods and the small sample size in the study, there is a reasonable likelihood that path c' is not completely zero even though the analyses indicate a nonsignificant relationship between PSI and OQ-45 when GRCS is included in the model. Thus, the more accurate conclusion from the analyses is that gender role conflict partially mediates the relationship between problem-solving appraisal and psychological functioning.

Test of Alternative Equivalent Model

In addition to testing the significance of the mediational model, Frazier et al (2004) recommend identifying alternative equivalent models that might also be consistent with the data to further ensure accuracy of findings. Per Kenny

(<http://davidakenny.net/cm/mediate.htm>), to obtain more confidence in the mediation model the mediator (i.e., GRCS) and outcome variable (i.e., OQ-45) were interchanged and previously outlined analyses were performed (see figure 2). When the OQ-45 was included in the model as a mediator, the relationship between PSI and GRCS remained significant (see Table 4), indicating that the OQ-45 is not a plausible mediator and the model is not a significant alternative model to the hypothesized model. This finding provides further confidence in the significant findings that gender role conflict mediates the relationship between problem-solving appraisal and psychological functioning.

Exploratory Analyses of GRCS and PSI factors

Pearson correlation analyses were conducted to identify significant relationships between subscales in the PSI (PSC, AAS, PC), GRCS (SPC, RE, RABBM, CBWFR), and OQ-45 total scale score. Correlation analyses identified significant, positive associations between the OQ-45 and PSC and PC factors of the PSI, but not the AAS factor. All four factors of the GRCS were significantly, inversely associated with the OQ-45 and PSC, AAS, and PSC factors of the PSI (see Table 2).

To provide exploratory information about the relationship between PSI, GRCS, and OQ-45, a simultaneous regression analysis was conducted of the OQ-45 on the three PSI factors and four GRCS factors. With all seven factors included in the regression, only AAS (PSI factor) and CBWFR (GRCS factor) were significant predictors of psychological functioning (see Table 5). This finding is particularly interesting in that bivariate correlation analyses between AAS and OQ45 were not significant. One plausible explanation for this finding is that other factors in the PSI share more variance with GRCS factors, while AAS provides more unique explanation for the variance in the

OQ-45. While exploratory, this finding highlights the potential importance of both AAS and CBWFR in psychological outcomes.

DISCUSSION

Findings from this study support the hypothesized model that gender role conflict is a partial mediator between problem-solving appraisal and psychological functioning. These findings provide needed information on: (a) third variable influence on gender role conflict (e.g., Good et al., 2004; Heppner, 1995; O'Neil, 2008); (b) relationships between problem-solving appraisal and gender role conflict with psychological outcomes; (c) a greater understanding of problem-solving appraisal, gender role conflict, and psychological functioning of firefighters; and (d) implications for influencing psychological functioning in firefighters.

Partial Mediation Implications

Gender role conflict as a significant mediator between problem-solving appraisal and psychological functioning implies a causal relationship between problem-solving appraisal to gender role conflict and gender role conflict to psychological functioning (MacKinnon, Krull, & Lockwood, 2000). In this study, the partial mediation implication is not that problem-solving appraisal is the only cause of gender role conflict, but that it is a contributor to gender role conflict beliefs. It also does not imply that problem-solving appraisal only has an impact on psychological functioning by means of gender role conflict. Instead, Shrout and Bolger (2002) identify several ways that partial mediation can be interpreted. First, the partial mediation finding may indicate that PSI has both a direct effect on psychological functioning as well as an indirect effect through gender role conflict. In this way, ineffective problem solving may promote gender role conflict by either contributing to the formation of or reinforcing gender role conflict. For

example, ineffective problem-solvers may hold on to gender-role beliefs and behaviors more rigidly or rely on them more consistently which consequently leads to poorer psychological outcomes. In addition, problem-solving appraisal has a direct influence on psychological functioning in that ineffective problem-solving will directly lead to psychological distress. Second, partial mediation accounts for other mediators besides gender role conflict that contribute to the effect of problem-solving appraisal on psychological functioning. Third, the effect of gender role conflict as a mediator between problem-solving appraisal and psychological functioning may change with different individuals or subgroups of the population. For example, the mediation relationship may differ based on career-related variables, such as rank in the fire department or years of experience, or individual variables such as personality style. All three of these conceptualizations of this partial mediation provide viable options for gaining more complex conceptual understanding of gender role conflict and problem-solving appraisal, in addition to providing more direction in working with firefighters.

The causation implications of mediation and interpretations of partial mediation indicate that impacting one's problem-solving effectiveness is likely to have an effect on both gender role conflict and psychological functioning. Because both problem-solving appraisal and gender role conflict can be changed, interventions can be targeted at either increasing problem solving skills or augmenting gender role beliefs. Given the masculine-oriented environment of firefighting, it is likely that fire departments and firefighters may be more willing to engage in interventions and behaviors that promote greater problem-solving effectiveness more than those that focus on gender role beliefs. This conclusion does not negate the importance of the impact of gender role conflict on

psychological outcomes, but does indicate that targeting problem-solving appraisal is one way of impacting both gender role conflict and psychological functioning for firefighters. Beyond progressing research, these findings identify another means by which clinicians of firefighters and consultants for fire departments may engage in decreasing psychological distress for this population.

Problem-Solving Appraisal, Gender Role Conflict, and Psychological Functioning

The current study's results support prior research that connects perceived ineffective problem-solving and gender role conflict with greater psychological distress (Heppner et al., 2004; O'Neil, 2008). While the problem-solving appraisal literature has consistently exhibited this association, the gender role conflict literature has had mixed results. Whereas some aspects of gender role conflict may have positive benefits, such as those suggested by Levant (1995) and found by Good and colleagues (2006), the results of this study support an association between gender role conflict and psychological distress (exhibited both in the GRCS total score and four factors). Thus, they provide an illustration of the negative psychological impact of gender role conflict.

However, the context of the firefighting career may be informative in conceptualizing these findings and those of prior research that have identified gender role conflict leading to positive outcomes. In certain aspects of the firefighting job, exhibiting traditional masculine beliefs or behaviors may be useful in accomplishing required tasks, such as restricting emotions during emergencies. The results of this study suggest that what is beneficial for the firefighter in an emergency is likely not what is most beneficial for the firefighter as an individual. The beliefs that are likely reinforced and beneficial in one setting (e.g., emergency) are likely to be counterproductive in another (e.g.,

interpersonal interactions). Therefore, it may not always be that the sheer existence of some gender role beliefs (e.g., “Moving up the career ladder is important to me”) are problematic all the time, but the rigidity of these beliefs and behaviors and the context in which they are used may be critical to their usefulness.

Furthermore, instead of attempting to force firefighters (or men) to completely resolve gender role conflict or abandon their beliefs, effective interventions may help them augment beliefs or behaviors as well as identify in what settings or to what extent their gender-role beliefs are productive. For example, helping them distinguish between the restriction of emotions during an emergency and as a general rule of operating in life. Given the causal relationship between ineffective problem-solving appraisal and gender role conflict suggested by the mediation analyses, it is conceivable that increasing their effective problem-solving appraisal may directly impact gender role conflict by both becoming better problem-solvers in general and in regards to their conflict. Although these assertions cannot be verified through the current study, interpretation of the results within the context of firefighting setting aligns with the critics of gender role conflict who have called for further identification of contextual influences on gender role conflict (O’Neil, 2008). Future research that isolates contextual differences in the impact of gender role conflict on psychological functioning will provide greater insight into why gender role conflict, contrary to its own definition, provides some benefits along with negative psychological outcomes.

Descriptive information of firefighters

In addition to supporting the mediation model, the results provide greater descriptive information on firefighters. To begin, firefighters achieved mean scores on

the PSI comparable to those found in a sample of the average adult population (Heppner, 1988). However, firefighters in this study had higher mean scores on the OQ-45 than those in a community sample, more closely resembling those seeking psychological services through an Employee Assistance Program (Lambert et al., 2004). This provides some indication that firefighters likely experience greater psychological distress on a daily basis (not just in regards to PTSD symptoms or experiencing a traumatic event) than the average population. However, past research on firefighters' psychological functioning has predominantly focused on trauma response and PTSD (e.g., Del Ben et al., 2006; Hagh-Shenas et al., 2005). The results of this study suggest it is less likely that distress response to traumatic events is the main source of psychological distress, but instead the daily stressors, structure of the department, or other variables (e.g., problem-solving appraisal, gender role conflict) are elevating baseline psychological distress of firefighters. Thus, fire departments or personnel who only attend to psychological needs after a trauma may negate the importance of routine, daily variables that contribute to general psychological functioning. In comparison to the general population and other career fields, fire departments and personnel may need to be more active in attending to psychological needs. This finding warrants greater investigation of the influences of psychological distress and implementation of interventions that focus on factors, such as problem-solving appraisal and gender role conflict, which impact psychological outcomes.

The significant difference between mean scores on the problem-solving appraisal between officers and firefighters/engineers, as well as the correlation between age, years of experience, rank, and problem-solving appraisal, indicates that problem-solving

appraisal likely differs with each of these variables. While inconclusive, it may be that individuals become more effective at problem-solving as they age, gain more experience, and obtain greater rank. Greater problem-solving appraisal has been previously associated with increased age (Haught, Hill, Nardi, & Walls, 2000) as well as career knowledge, planning career roles, and career decision-making style and lower burnout rates (see Heppner et al., 2004). It is likely those firefighters with more effective problem-solving are going to engage in career-related behaviors, such as planning and decision-making, which may lead to greater opportunity for promotions and less likely lead to burnout. This relationship of age, years of experience, and rank with problem-solving appraisal is likely a combination of both greater problem-solving appraisal being exhibited by those who obtain promotions as well as positive problem-solving appraisal increasing as an individual maintains their employment. Future research that further evaluates firefighters, or other career fields, within the context of the structural hierarchy of the work environment or experience level will better be able to determine causality for the presence of these associations.

It is also important to note that gender role conflict was positively related to age. This is contrary to past findings that suggest older men exhibit less gender role conflict, which O'Neil (2008) partially attributed to having the life experience opportunities to find resolution to gender role conflict attitudes, beliefs, and behaviors. These results may mean that firefighters experience greater gender role conflict as they get older. Because of the limitations of correlation data, causations of age on gender role conflict cannot be assumed. However, the lack of association between years of experience and rank with gender role conflict suggests a more plausible explanation is that older generation

firefighters have more salient gender role conflict beliefs compared to their younger counterparts.

Furthermore, the low mean alcohol use finding is somewhat contrary to past research that has highlighted the higher use of alcohol and the use of alcohol as a coping mechanism among fire personnel (North et al., 2002; Boxer & Wild, 1993). While somewhat limited in generalization and conclusions that can be made, the large range in consumption in this study suggests that alcohol may certainly be used by some in excess, but these individuals appear to be a smaller subsection of the population. In addition, contrary to some previous research, the results from this study did not find an association between gender role conflict or problem-solving appraisal and alcohol use. While the majority of research connects greater gender role conflict as well as ineffective problem-solving appraisal with substance abuse, O'Neil (2008) and Heppner et al. (2004) did identify a small subsection of studies that have not found a significant relationship with these constructs and alcohol. Whereas alcohol consumption is likely an important factor in the psychological functioning of firefighters, these results provide some challenge to the connection between alcohol use and gender role conflict and problem-solving appraisal as well as the use of alcohol among firefighters.

Implications of subscale analyses

Subscale analyses of the three PSI factors (PSC, AAS, PC) and four GRCS factors (SPC; RE; RABBM; CBWFR) are useful in identifying specific influences in the relationship between problem-solving appraisal, gender role conflict, and psychological functioning. Whereas Table 2 highlights correlations between the GRCS and PSI factors, some of these relationships are seemingly more pertinent to firefighters than others.

Consistent with the recognized firefighter environment (Scott & Myers, 2005), Restrictive Emotionality (RE) was the only GRCS factor to be associated with all three PSI factors. Partially consistent with the results of Good et al. (2004), this finding identifies Problem Solving Confidence (PSC), Approach-Avoidance Style (AAS), and Personal Control (PC) as all potential influences on restrictive emotionality and consequent psychological outcomes. Not only does this highlight the importance of the role of restricting emotions for firefighters, but it also recognizes the potential for impacting this aspect of GRCS and the firefighting culture through all three factors of the PSI. Clinicians therefore may be able to influence beliefs and behaviors about the restriction of emotions, and consequent psychological functioning, through increasing problem-solving confidence, problem-approach behaviors, and perceived personal control.

Whereas Restrictive Emotionality has an important role in the gender role conflict of firefighters, it appears that AAS and CBWFR are the most critical factors influencing psychological functioning. AAS has been found to be a factor that repeatedly contributes to positive coping (see Heppner et al., 2004 for review). Firefighters who approach problems will likely experience greater psychological benefit in comparison to those who typically avoid problem solving activities. Furthermore, CBWFR has not been as frequently recognized for its independent role in psychological functioning. It could be hypothesized that this factor is particularly salient to firefighters' psychological functioning because of the stressful nature of the occupation and the long periods of time spent away from families. This finding suggests that targeting these two factors in interventions may provide the most benefit to participants. It may be beneficial to teach

approach behaviors as well as ways to minimize conflicts between work and family in order to maximize benefits in psychological functioning. In this way, interventions may more narrowly focus on targeting aspects of problem-solving and gender role conflict most pertinent to firefighters.

Directions for future research

The current study provides several implications for future research. As Varvel and colleagues (2007) identified, there are differences between salient social support for firefighters/engineers and officers. Similar to the findings of Varvel and colleagues (2007) on differences between social support according to rank, problem-solving appraisal may vary depending on the rank of individuals. Research that investigates the way that problem-solving appraisal may change as responsibility and power increase will provide greater understanding of problem-solving appraisal in firefighters as well as other careers. In addition, the partial mediation model provides space for other potential mediators between problem-solving appraisal and psychological functioning to be investigated, such as occupational stress, job satisfaction, and stress. Finally, this research can be expanded to similar career fields that are also male-dominated, such as police and military, as well as within samples of greater racial/ethnic and cultural diversity. Future research can build on the current findings by identifying differences in mediation model influences on problem-solving appraisal and gender role conflict that include different levels of career power structures (e.g., supervisors, supervisees) and race/ethnicity.

Limitations

These results provide several implications specific for firefighters, but it is important to recognize the limitations of the study. First, the sample size is relatively

small, coming from one department in one region of the country. Although consistent with the demographics of other departments (Kirschman, 2004), the sample was relatively homogenous, consisting of mostly Caucasian males. These sample characteristics consequently put some limitation on the generalizability of the findings to other regions of the country or world as well as to members of racial/ethnic minority groups. Second, the Baron and Kenny (1986) method used to measure mediation has been criticized for exhibiting low power (and consequently greater Type II error), does not provide confidence intervals of the indirect effect, and does not account for the asymmetry of the product of paths a and b (Mallinckrodt, Abraham, Wei, & Russell, 2006; Pituch et al., 2005). While this is a limitation of the Baron and Kenny methodology, the results of this study did not show effects of suppression and exhibited clear indications of partial mediation. Third, this study used a revised version of the RABBM factor of the GRCS. Whereas this factor exhibited a high alpha level and has been used in prior research (Good et al., 2006), it is possible that it may have not provided as much clarity on the influence of RABBM. However, it is highly unlikely to have had any impact on the overall mediation model. In spite of the limitations of the methodology, the findings provide valuable information on both the psychological functioning of firefighters as well as the effects of GRC and problem-solving appraisal on psychological functioning.

Conclusions

The findings of this study provide important information about firefighters, gender role conflict, and problem-solving appraisal. The significant mediation relationship provides needed understanding of the causal relationship between problem-

solving appraisal and gender role conflict. The firefighter population provides a unique contextual perspective for interpreting the implications of this relationship. The findings provide an understanding of the psychological functioning of firefighters and implications for interventions with firefighters (as well as other similar populations) by means of both problem-solving appraisal and gender role conflict. Thus, these findings are likely useful to researchers, fire departments, consultants, and clinicians interested in creating interventions or advancing research on problem-solving appraisal and gender role conflict.

REFERENCES

- Baker, S. R., & Williams, K. (2001). Short communication: Relation between social problem-solving appraisals, work stress and psychological distress in male firefighters. *Stress and Health, 17*, 219-229.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Beaton, R., Murphy, S., Pike, K., & Jarrett, M. (Eds.). (1995). *Stress-symptom factors in firefighters and paramedics*. Washington, D.C.: American Psychological Association.
- Bergen, D. J. (1997). Gender role conflict and coping: A preliminary investigation of college males. (Doctoral dissertation, University of North Carolina, 1997). *Dissertation Abstracts International, 57*, 5059.
- Birhistle, I. (1999). Male gender role conflict, coping skills, and hopelessness. *Eisteach, Irish Association for Counselling and Therapy, Summer*, 2-8.
- Black, L. K. (1997). How do firefighters cope? An investigation of coping strategies and symptoms of distress within the context of daily stressors. (Doctoral dissertation, 1997). *Dissertation Abstracts International, 57*, 5907.
- Boxer, P., & Wild, D. (1993). Psychological distress and alcohol abuse among fire fighters. *Scandinavia Journal of Work, Environment, and Health, 19*(2), 121-125.
- Brown, J., Mulhern, G., & Joseph, S. (2002). Incident-related stressors, locus of control, coping, and psychological distress among firefighters in Northern Ireland. *Journal of Traumatic Stress, 15*(2), 161-168.
- Chamberlin, W. (1993). Gender role conflict as a predictor of problem solving, leadership style, authoritarian attributes, and conflict management attitudes. (Doctoral dissertation, Columbia University, 1993). *Dissertation Abstracts International, 52*, 844.
- Chang, C., Lee, L., Connor, K. M., Davidson, J. R. T., Jeffries, K., & Lai, T. (2003). Posttraumatic distress and coping strategies among rescue workers after an earthquake. *Journal of Nervous and Mental Disease, 191*(6), 391-398.
- Clohessy, S., & Ehlers, A. (1999). PTSD symptoms, response to intrusive memories and coping in ambulance workers. *British Journal of Clinical Psychology, 38*, 251-265.

- Del Ben, K. S., Scotti, J. R., Chen, Y., & Fortson, B. L. (2006). Prevalence of posttraumatic stress disorder symptoms in firefighters. *Work & Stress, 20*(1), 37-48.
- Dudek, B., & Koniarek, J. (2003). Coping style and the development of posttraumatic stress disorder symptoms. *Polish Psychological Bulletin, 34*(2), 59-65.
- Dyregrov, A., & Mitchell, J. T. (1992). Work with traumatized children: Psychological effects and coping strategies. *Journal of Traumatic Stress, 5*(1), 5-17.
- Faria, M. (2000). Analysis of the components of gender role conflict. Unpublished masters thesis, University of Lusofona of Humanities and Technology, Lisboa, Mestrado de Sexologia, Lisbon, Portugal.
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*(1), 115-134.
- Good, G. E., Heppner, P. P., DeBord, K. A., & Fischer, A. R. (2004). Understanding men's psychological distress: Contributions of problem-solving appraisal and masculine role conflict. *Psychology of Men & Masculinity, 5*(2), 168-177.
- Good, G. E., Roberston, J. M., O'Neil, J. M., Fitzgerald, L. F., Stevens, M., DeBord, K. A., et al. (1995). Male gender role conflict: Psychometric issues and relations to psychological distress. *Journal of Counseling Psychology, 42*, 3-10.
- Good, G. E., Schopp, L. H., Thomson, D., Hathaway, S., Sanford-Martens, T., Mazurek, M. O., et al. (2006). Masculine roles and rehabilitation outcomes among men recovering from serious injuries. *Psychology of Men & Masculinity, 7*(3), 165-176.
- Hagh-Shenas, H., Goodarzi, M. A., Dehbozorgi, G., & Farashbandi, H. (2005). Psychological consequences of the Bam earthquake on professional and nonprofessional helpers. *Journal of Traumatic Stress, 18*(5), 477-283.
- Haight, P. A., Hill, L. A., Nardi, A. H., & Walls, R. T. (2000). Perceived ability and level of education as predictors of traditional and practical adult problem solving. *Experimental Aging Research, 26*, 89-101.
- Heppner, P. P. (1988). *The problem solving inventory (PSI): Manual*. Palo Alto, CA: Consulting Psychologists.
- Heppner, P. P. (1995). On gender role conflict in men: Future directions and implications for counseling. *Journal of Counseling Psychology, 42*, 20-23.

- Heppner, P. P., & Heppner, M. J. (2008). The gender role conflict literature: Fruits of sustained commitment. *The Counseling Psychologist, 36*(3), 455-461.
- Heppner, P. P., & Petersen, C. H. (1982). The development and implications of a personal problem-solving inventory. *Journal of Counseling Psychology, 29*, 66-75.
- Heppner, P. P., Witty, T. E., & Dixon, W. A. (2004). Problem-solving appraisal and human adjustment: A review of 20 years of research using the problem solving inventory. *The Counseling Psychologist, 32*(3), 344-428.
- Jones, D. A. (1998). Gender role conflict, coping, and psychological distress in gay men. (Doctoral dissertation, Ohio State University). *Dissertation Abstracts International, 59*, 4468.
- Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analyses in social psychology. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., pp. 233-265). New York: Oxford University Press.
- Kirschman, E. (2004). *I Love a Firefighter*. New York: The Guilford Press.
- Lambert, M. J., Morton, J. J., Hatfield, D., Harmon, C., Hamilton, S., Reid, R. C., Shimokawa, K., Christopherson, C., & Burlingame, G. M. (2004). *Administration and scoring manual for the OQ-45.2 (Outcome Measures)*. Orem, UT. American Professional Credentialing Services.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Levant, R. F. (1995). Toward the reconstruction of masculinity. In R. F. Levant & W. S. Pollack (Eds.), *A new psychology of men*. New York: Basic Books.
- MacKinnon, D. P., Krull, J. L., & Lockwood, C. (2000). Mediation, confounding, and suppression: Different names for the same effect. *Prevention Science, 1*, 173-181.
- Mallinckrodt, B., Abraham, W. T., Wei, M., Russell, D. W. (2006). Advances the testing statistical significance of mediation effects. *Journal of Counseling Psychology, 53*(3), 372-378.
- Marmar, C. R., Weiss, D. S., Metzler, T. J., Ronfeldt, H. M., & Foreman, C. (1996). Stress responses of emergency services personnel to the Loma Prieta earthquake interstate 880 freeway collapse and control traumatic incidents. *Journal of Traumatic Stress, 9*, 63-85.

- Nixon, S. J., Schorr, J., Boudreaux, A., & Vincent, R. D. (1999). Perceived sources of support and their effectiveness for Oklahoma City firefighters. *Psychiatric Annals*, 29(2), 101-105.
- North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Cox, J., Spitznagel, E. L., et al. (2002). Coping, functioning, and adjustment of rescue workers after the Oklahoma City bombing. *Journal of Traumatic Stress*, 15(3), 171-175.
- North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Spitznagel, E. L., Cox, J., et al. (2002). Psychiatric disorders in rescue workers after the Oklahoma City bombing. *American Journal of Psychiatry*, 159(5), 857-859.
- O'Neil, J. M. (2008). Complexity, contextualism, and multiculturalism: Responses to the critiques and future directions for the gender role conflict research program. *The Counseling Psychologist*, 36(3), 469-476.
- O'Neil, J. M. (2008). Summarizing Twenty-five years of research on men's gender-role conflict using the gender role conflict scale: New research paradigms and clinical implications. *The Counseling Psychologist*, 36(3), 358-445.
- O'Neil, J. M., Helms, B., Gable, R. K., David, L., & Wrightsman, L. S. (1986). Gender role conflict scale (GRCS): College men's fears of femininity. *Sex Roles*, 14, 335-250.
- Pituch, K. A., Whittaker, T. A., & Stapleton, L. M. (2005). A comparison of methods to test for mediation in multisite experiments. *Multivariate Behavioral Research*, 40(1), 1-23.
- Preacher, K. J. & Leonardelli, G. J. (2003). Calculation for the Sobel Test: An interactive calculation tool for mediation tests. Retrieved March 15, 2008, from <http://www.psych.ku.edu/preacher/sobel/sobel.htm>
- Scott, C., & Myers, K. K. (2005). The socialization of emotion: Learning emotion management at the fire station. *Journal of Applied Communication Research*, 33(1), 67-92.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7(4), 422-445.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Eds.), *Sociological methodology 1982* (pp. 290-312). Washington DC: American Sociological Association.

- Stanzione, D. (2005). Male gender role strain, coping, and college adjustment. (Doctoral dissertation, Rutgers The State University of New Jersey-New Brunswick, 2005). *Dissertation Abstracts International*, 66, 2317.
- Stillson, R. W. (1988). Gender role conflict in adult men: A study of predictive variables. (Doctoral Dissertation, University of Connecticut, 1998). *Dissertation Abstracts International*, 50, 366.
- Strom, T. (2004, July). Gender role conflict and dispositional coping styles in college age men. In J. M. O'Neil & G. E. Good (Chairs), *Gender role conflict research: Four empirical studies and new research paradigm*. Symposium conducted at American Psychological Association convention, Honolulu, HI.
- Stuhlmiller, C. M. (1994). Occupational meanings and coping practices of rescue workers in an earthquake disaster. *Western Journal of Nursing Research*, 16(3), 268-287.
- Varvel, S. J., He, Y., Tager, D., Bledman, R. A., Chaichanasakul, A., Mendoza, M. M., et al. (2007). Multidimensional, Threshold Effects of Social Support in Firefighters: Is more support invariably better? *Journal of Counseling Psychology*, 54(4), 458-465.
- Wester, S. R., Kuo, B. C., & Vogel, D. C. (2006). Multicultural coping: Chinese Canadian adolescents, male gender role conflict, and psychological distress. *Psychology of Men and Masculinity*, 7, 83-10.

Table 1

Descriptives and correlations of GRCS, PSI, OQ-45, and Demographic Variables

VAR	1	2	3	4	5	6	7	8	9
1. GRCS	-----	-.41**	-.41**	.41**	.09	.17	.20	.18	.05
2. PSI		-----	.31**	-.31**	.02	-.25*	-.40**	-.12	-.15
3. OQ-45			-----	-.31**	-.15	-.16	-.18	-.13	.03
4. Age				-----	.11	.67**	.58**	.16	.11
5. Rel. Status					-----	.10	.06	-.07	-.13
6. Service						-----	.54**	.09	.09
7. Rank							-----	.22*	.25*
8. Alcohol								-----	.35**
9. Cigs									-----
<i>M</i>	112.35	79.50	40.09	37.26	-----	12.69	-----	4.52	3.19
<i>SD</i>	26.00	17.22	14.93	8.34	-----	7.33	-----	5.44	18.97
Range	55-173	39-119	13-81	23-57	-----	.5-35	-----	0-30	0-140

Note: $N = 95$. GRCS = Gender Role Conflict Scale; PSI = Problem Solving Inventory; OQ-45: Outcome Questionnaire-45; Rel. Status = Relationship status; Service = Years of volunteer and career fire experience; Rank = Rank in Fire Department; Alcohol = Alcohol drinks per week; Cigs = Cigarettes smoked per week. Mean score for GRCS derived from abbreviated 33-item scale.

* $p < .05$, ** $p < .01$

Table 2

Descriptives and Correlations of GRCS, PSI, OQ-45, and Corresponding Subscales

VAR	1	2	3	4	5	6	7	8	9	10
1. GRCS	-----	.80**	.83**	.80**	.71**	.41**	-.24*	-.33*	.49**	.41**
2. SPC		-----	.46**	.50**	.45**	.27**	-.11	-.23*	.38**	.29**
3. RE			-----	.70**	.40**	.45**	.31**	.40**	.42**	.33**
4. RABBM				-----	.43**	-.19	-.19	-.11	.50**	-.27*
5. CBWFR					-----	.27**	-.11	-.22*	.45**	.43**
6. PSI						-----	.78**	.91**	.80**	.31**
7. PSC							-----	.52**	.57**	.28**
8. AAS								-----	.59**	.17
9. PC									-----	.43**
10. OQ-45										-----
<i>M</i>	3.40	3.25	3.70	3.08	3.44	79.50	22.10	43.21	14.19	40.09
<i>SD</i>	.79	.30	.31	.16	.22	17.22	5.69	9.90	4.73	14.93
Range	55-173	19-68	14-59	4-24	6-36	39-119	11-38	22-65	5-24	13-81
alpha	.94	.86	.91	.89	.91	.90	.86	.86	.81	.90

Note: $N = 95$. GRCS = Gender Role Conflict Scale; SPC = Success, Power, Competition Issues; RE = Restrictive Emotionality; RABBM = Restricted Sexual and Affectionate Behavior Between Men; CBWFR = Conflict between Work and Leisure—Family Relations; PSI = Problem Solving Inventory; PSC = Problem Solving Confidence; AAS = Approach Avoidance Style; PC = Personal Control; OQ-45: Outcome Questionnaire-45. *M* and *SD* for GRCS total and corresponding factors indicate average item response.

* $p < .05$, ** $p < .01$

Table 3

Mediation Relationships between problem-solving appraisal, gender role conflict, and psychological functioning

Path/Effect	<i>B</i>	<i>SE</i>	95%: CI	β
c (PSI → OQ)	.275**	.092	.093, .457	.309
a (PSI → GRCS)	-.630**	.153	-.933, -.327	-.407
b (GRCS → OQ)	-.202**	.060	-.322, -.081	-.370
c'	.097	.095	-.092, .287	.113

Note: N = 95. PSI = Problem Solving Inventory; GRCS = Gender Role Conflict Scale; OQ = Outcome Questionnaire-45.

** $p < .01$

Table 4

Alternative Model of Mediation between Problem-Solving Appraisal, Gender Role Conflict, and Psychological Functioning

Path/Effect	<i>B</i>	<i>SE</i>	95%: CI	β
c (PSI → GRCS)	-.630**	.153	-.933, -.327	-.407
a (PSI → OQ)	.275**	.092	.093, .457	.309
b (OQ → GRCS)	-.620**	.186	-.990, -.251	-.338
c'	-.465**	.160	-.783, -.147	-.295

Note: N = 95. PSI = Problem Solving Inventory; GRCS = Gender Role Conflict Scale; OQ = Outcome Questionnaire-45.

** $p < .01$

Table 5

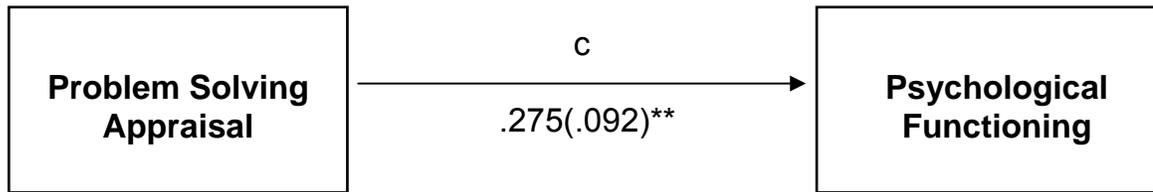
Exploratory Multiple Regression Analyses of OQ-45 on all PSI factors and GRCS factors

VAR	<i>B</i>	<i>SE</i>	95%: CI	β	<i>t</i>
PSC	.597	.344	-.089, 1.28	.221	1.73
AAS	-.386	.192	-.768, -.003	-.267	-2.01*
PC	.537	.453	-.366, 1.44	.171	1.19
SPC	-.109	.182	-.471, .254	-.079	-.598
RE	-.388	.244	-.875, .099	-.262	-1.59
RABBM	.391	.457	-.52, 1.30	.143	.86
CBWFR	-.563	.249	-1.06, -.067	-.285	-2.26*

Note: N = 95. PSI = Problem Solving Inventory; PSC = Problem Solving Confidence; AAS = Approach Avoidance Style; PC = Personal Control; SPC = Success, Power, Competition Issues; RE = Restrictive Emotionality; RABBM = Restricted Sexual and Affectionate Behavior Between Men—Homophobia; CBWFR = Conflict between Work and Leisure—Family Relations.

* $p < .05$

A



B

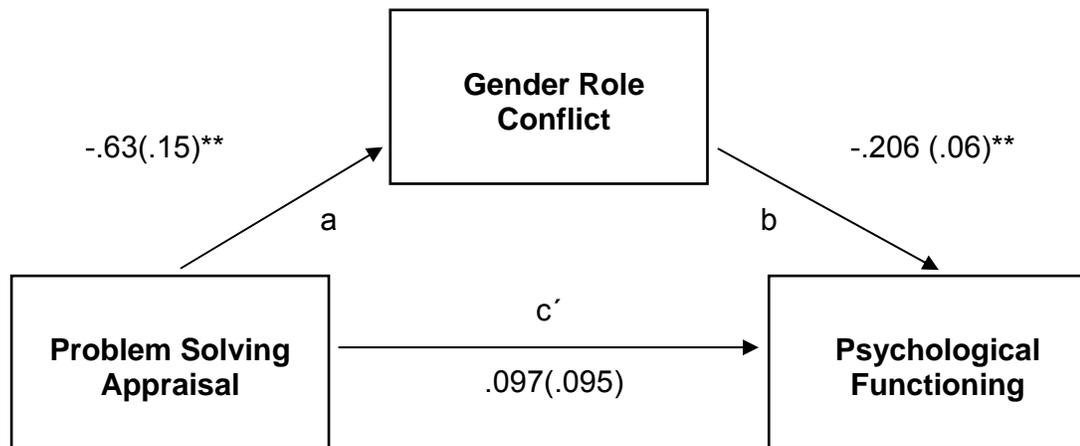


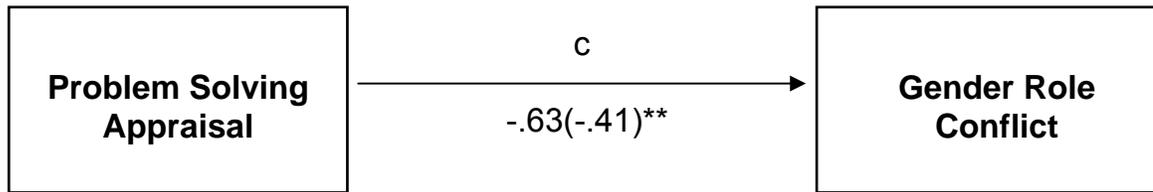
Figure 1. Mediating role of gender role conflict in explaining the relation between problem-solving appraisal and psychological functioning.

A: Direct effect of problem-solving appraisal on psychological functioning.

B: Three factor mediation model with gender role conflict as a mediator between problem-solving appraisal and psychological functioning

Note: $N = 95$. Unstandardized regression coefficients and corresponding standardized regression coefficients. $^{**}p < .01$.

A



B

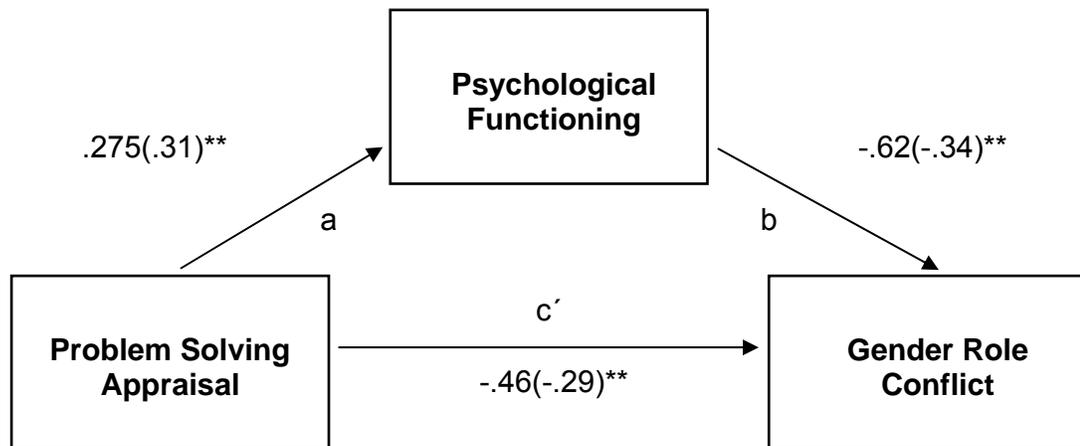


Figure 2. Alternative mediation model with psychological functioning as a mediator between problem-solving appraisal and gender role conflict.

A: Direct effect of problem-solving appraisal on gender role conflict.

B: Three factor mediation model with psychological functioning as a mediator between problem-solving appraisal and gender role conflict

Note: $N = 95$. Unstandardized regression coefficients and corresponding standardized regression coefficients. $^{**}p < .01$.

APPENDIX I:
EXTENDED LITERATURE REVIEW

EXTENDED LITERATURE REVIEW

There are over a million firefighters in the United States. With their extensive duties in both rural and urban areas, firefighters are an essential component of the well-being of any community (National Fire Protection Agency [NFPA], 2006). They comprise a unique career group that is required to meet rigorous physical, emotional, and mental demands. Firefighters are not only responsible for the suppression of fire, but also serve as emergency medical responders (NFPA, 2006). They have specialized duties that often include the handling of hazardous materials, providing public relations services for their communities, and since September 11th, responding to terrorist attacks. Although a vital and dangerous occupation, there is limited psychological research that has been conducted on firefighters. Many of the articles, chapters, and books published on firefighters are non-empirical and have focused largely on stress and trauma response (e.g., Miller, 1995) and more recently the aftermath experience of September 11th and terrorism (e.g., Barbanel et al., 2006; Greene, Kane, Christ, Lynch, & Corrigan, 2006; Schorr & Boudreaux, 2005). The majority of empirical literature on firefighters is also somewhat limited in its conclusions because it involves mixed-samples of emergency service workers, which includes police officers, Emergency Medical Technicians/Paramedics, as well as firefighters. While these studies provide important information about the overall experience of emergency service personnel, they do not delineate the unique experience of firefighters. This study will seek to add to the empirical psychological literature by examining the psychological functioning of firefighters and the relationship of psychological functioning to other pertinent variables:

gender role conflict and problem-solving appraisal (PSI), within an exclusive sample of firefighters.

First, this paper will present an overview of the firefighting occupation, stressors and risks of firefighting, and review of firefighting literature as it relates to psychological functioning. Second, this paper will discuss the role of masculinity within the firefighter experience. The Gender Role Strain Paradigm (Pleck, 1981; Pleck, 1995) will be described as it relates to both masculine ideology and gender role conflict. The Gender Role Conflict Paradigm, gender role conflict, and Gender Role Conflict Scale (GRCS: O'Neil, Helms, Gable, David, & Wrightsman, 1986; O'Neil, Good, & Holmes, 1995; O'Neil, 2008) will be discussed and a review of relevant research on the influence of gender role conflict on psychological functioning will be provided. Third, this paper will discuss the coping literature of firefighters and propose problem-solving appraisal as a more appropriate framework for identifying firefighting coping. A review of the problem-solving appraisal literature, measured by the Problem-Solving Inventory (PSI: Heppner, 1988; Heppner & Petersen, 1982), will also be provided as it relates to firefighters and psychological functioning. In addition, the only published study evaluating the PSI and GRCS will be reviewed (Good, Heppner, DeBord, & Fischer, 2006). Finally, the Outcome Questionnaire-45.2 (OQ-45: Lambert et al, 2004) assessing psychological functioning will be examined.

Firefighters: Occupational Overview

Firefighting is a traditionally high-risk career field requiring intense physical ability and daily risk of bodily harm. Firefighters are at risk for injury or death during fires and training exercises that include burns from flames, collapsing buildings, traffic

accidents while responding to calls, exposure to biomedical and disease pathogens during medical calls, and inhalation of carcinogens and other chemicals during fires (see Orris, Melius, and Duffy, 1995; Bellrose & Pilisuk, 1991; U.S. Department of Labor, 2004). They also experience fatigue and sleep disturbances from the shift schedule (Takeyama et al, 2005), as well as marked shifts in adrenaline from boredom of inactivity at the station to intense physical strain while responding to emergencies (Beaton, Murphy, Pike, and Jarrett, 1995). Such documented dangers of the job not only put the firefighters at physical risk, but also are likely to contribute to the psychological functioning of firefighters.

Psychological strain of firefighting is a critically important element of the firefighting work environment. It is well-documented that firefighting is a stressful occupation, with firefighting qualifying as a high-strain occupation consisting of multiple high demands and low job control (Beaton et al., 1995). Firefighters are expected to act in superhuman or heroic manners by submitting to the aforementioned physical risks, while also being psychologically and emotionally stoic in the face of trauma and other stressors. At the same time, firefighters have little control over their jobs. They are subject to the decisions of a rigid fire organizational structure (Beaton & Murphy, 1993) and their primary duty is responding to unplanned emergency calls. In addition, they work long, irregular hours that often require them to be away from their families for extended periods of time and during holidays (U.S. Labor Department, 2004), and often have to work second jobs because of low firefighting earnings (Murphy, Beaton, Cain, & Pike, 1994). The effects of this psychological strain on overall well-being is physically evident in that stress and overexertion (typically resulting in heart attacks or sudden cardiac

problems) are the leading causes of death of on-duty firefighters (NFPA, 2006). This further indicates that the psychological elements of job strain have a fundamental role in the life and death of on-duty firefighters. Thus, the nature of the firefighter career is an inherent mental strain and puts firefighters at psychological risk.

However, the variability of results in the literature suggests that the psychological risk of firefighters may not necessarily lead to poor psychological outcomes. In a study of firefighters and paramedics, Beaton and colleagues (1995) used cluster analyses to identify stress-induced disorders. Two high-risk groups were identified: (a) somatic complaints and mental health symptoms and (b) emotional difficulties. Only twenty percent of firefighters and paramedics sampled resided in either of these clusters, with the majority of firefighters and paramedics residing in a third low-risk symptom group. While any self-report measure is susceptible to underreporting, these findings suggest that the vast majority of firefighters have good psychological outcomes despite working in a high-strain environment. The inherent psychological strain of the occupation may not be indicative of the level of psychological functioning in individual firefighters. In addition, these findings also suggest the role of another contributing variable that allows the majority of firefighters to maintain psychological functioning while experiencing high stress.

Research on trauma response provides further evidence of variability in psychological outcomes among firefighters. In a review of the posttraumatic stress disorder (PTSD) firefighter literature, Del Ben, Scott, Chen, and Fortson (2006) recognized that studies have been varied in their conclusions about the extent to which firefighters experience PTSD, ranging from 6.5 percent (Haslam & Mallon, 2003) to 37

percent (Bryant & Harvey, 1995). Consistent with other studies that used DSM-IV criteria, Del Ben and colleagues (2006) found that approximately 5 percent of firefighters sampled met diagnostic criteria for PTSD (Haslam & Mallon, 2003). This literature identifies that the knowledge base of psychological outcomes in firefighters is somewhat inconclusive and may be more minimal than some research suggests. In a related study of the Oklahoma City bombing, the majority of firefighters who exhibited symptoms of psychiatric disorders (i.e. panic disorders, mood disorders, anxiety disorders) post-trauma had exhibited pre-trauma psychopathology (North et al., 2002). This indicates that individual variables are more indicative of the well-being of firefighters and not necessarily exposure to trauma. These studies on psychological functioning show that the psychological strain of the occupation does not necessarily result in negative psychological outcomes in firefighters and that individual variability of firefighters likely contributes to psychological outcomes.

While studies support individual variability in psychological outcomes, the context of these studies also renders firefighter research as limited in its applicability. The vast majority of firefighter psychological research has focused on firefighters' response to trauma, including intense traumatic events such as earthquakes, bombings, and 9/11 (e.g., Hagh-Shenas, 2005; Nixon, Schorr, Boudreaux, & Vincent, 1999; North et al., 2002; Stuhlmiller, 1994). Whereas the wake of September 11th has provided added public exposure and emphasis on the traumatic experience of firefighters, a focus on such intense and unique critical incidents has overshadowed the psychological strain of daily work activity of firefighters. Research suggests that emergency personnel are more likely to be exposed to routine traffic accidents than large scale traumatic events (Clohessy &

Ehlers, 1999) and will experience similar stress responses from small and large scale traumas (Marmar, Weiss, Metzler, Ronfeldt, & Foreman, 1996). Therefore, the historical emphasis on trauma provides a narrow view of the firefighter experience and neglects the more ritualistic and daily impacts of the career environment.

A trauma-centered approach is also inconsistent with literature that has thoroughly established that an individual's psychological functioning can be impacted by both minor and major stressors (Heppner, Witty, & Dixon, 2004; Lazarus & Folkman, 1984). Research of emergency personnel has identified the importance of daily activity, such as organizational stressors, in psychological functioning (Beaton & Murphy, 1993; Brough, 2002), while some argue that organizational stressors of emergency personnel can have an even more profound effect on psychological well-being than trauma (Kop, Euwema, & Schaufeli, 1999). The impact of non-trauma related firefighter experiences is also evident in Hildebrand's (1984) identified psychological stressors that include: general dangers of the job (e.g., risk of injury), organizational attributes (e.g., policies, procedures, and management), boredom and inactivity, and false alarms. Hildebrand (1984) further identified five stressors that are unique to fire personnel: (a) level of uncertainty, (b) physical response to alarm, (c) interpersonal tension, (d) exposure to human tragedy, and (e) fear. While conducted 20 years ago, the organizational structure of fire departments and job requirements have remained stable and make Hildebrand's assertions applicable to modern firefighters. These conclusions support a need to focus on the firefighter experience within the context of daily living. Thus, identifying individual variability of firefighter psychological outcomes within the context of daily living provides a more complete picture of the firefighter experience and increases the

generalizability of research findings to a greater number of firefighters. Because of the nature of the job and work environment, there are likely to be individual variables that are particularly salient for firefighters. Two such factors that may be particularly important in understanding those individual differences in psychological outcomes of firefighters are male gender role conflict and coping in the form of problem-solving appraisal.

Firefighters and Gender Role Conflict

Firefighting has been historically viewed as representing the essence of masculinity (Kirschman, 2004). Issues of masculinity are likely to be particularly salient for firefighters because of the nature of the work and the work environment. Firefighting is traditionally a male-dominated field in which individuals work and live together for 24 hour shifts for approximately 10 days a month. While the presence of women in the career field is increasing and likely has an impact on the work environment, women are in the minority and are more likely to have to conform to the social norms and roles than they are to transform them. Women comprise only 3 percent of professional fire personnel, compared to law enforcement and the armed forces in which 12 to 15 percent of personnel are women (Kirschman, 2004). Firefighting is also traditionally a tightly structured community with a long history of traditions (Kaprow, 1991; Kirschman, 2004). Firefighters are typically valued for being risk takers, courageous, and self-reliant (Kirschman, 2004). The U. S. Labor Department (2004) lists courage, strength, initiative, endurance, self-discipline, mechanical aptitude, dependability, and ability to work well with others as key attributes of successful firefighters in which asking for help is deemed weak and unprofessional (Haslam & Mallon, 2005). The structure of the firefighting

community and valued personal characteristics may therefore promote masculine norms with strict male gender roles being more readily valued and reinforced.

The socialization in firefighting lends itself to the reinforcement of traditional masculine beliefs and underscores the powerful influence the social environment of firefighting can have on individual firefighters. The socialization process and emotion management in firefighting was recognized through qualitative inquiry by Scott and Myers (2005). Firefighters in this study identified the necessity to properly regulate emotions to allow them to aggressively respond in an emergency fire, but also suppress emotions in order to focus on tasks during an emergency and keep those who they were assisting calm. Regulation of emotions was also important in maintaining peaceful relations in tight living quarters. Veteran firefighters set the standard for the proper regulation of emotion for incoming recruits with a recruit being deemed trustworthy if he could exhibit a proper management of emotions. Scott and Myers also recognized a “hazing” process in firefighting. During this process, it is important for the recruit to form a good reputation by going beyond required tasks and being able to manage emotions. According to Scott and Myers, this hazing process is intended for new firefighters to become trustworthy and socializes new firefighters into proper social behaviors, including emotion regulation. Thus, firefighters are socialized within their work environment to adhere to specific norms.

This socialization process can have positive benefits to firefighters in the form of unifying the team and building trust. However, this tradition can also lead to extreme behaviors (e.g., hog tying a sleeping female firefighter) in which unwilling participants are ostracized (Kirschman, 2004). Because many of the valued characteristics of

firefighters are consistent with traditional masculine values, socialization of firefighters is likely to promote a rigid view of the male gender role and may have negative impacts, as occurred in the aforementioned hazing incident. The role that traditional gender-role ideology may have with firefighters is multifaceted and complex. While it is generally the case in the psychological literature that restricted emotionality is conceptualized as psychologically damaging, the unique combination of skills and attributes required of firefighters may alter how some aspects of abiding by a strict gender role impacts psychological health. For example, firefighters are routinely exposed to trauma or life-threatening circumstances. Their ability to restrict their emotions around these types of events may be highly functional to their success in their job and psychological health. At the same time, this restriction of emotions may have a negative impact on relationships in their personal lives and may augment their ability to appropriately emotionally respond. Thus, it will be interesting to see how individuals in this particular occupational group perceive their masculine gender role and how this in turn influences their psychological outcomes.

To date, no empirical research has been conducted on firefighters that utilize gender role conflict as a framework for understanding their experience. Gender role conflict may be particularly important to firefighters because the diverse shared tasks of living together and working together may make norms and roles in the work environment even more salient in comparison to other male-dominated professions. As a result, it is likely that there may be specific aspects of gender role norms that are particularly endorsed within the subgroup societal population of firefighters. Beyond spending time away from families or significant others, it is also likely that powerful norms and roles

upheld in the work environment are contradictory to life outside of the fire station. As a result, firefighters are susceptible to experiencing psychological distress related to gender-role conflict, apart from other stressors of the job such as exposure to trauma. This is consistent with North and colleagues (2002) identification that low reports of psychological distress from firefighters may be related to a need to not appear vulnerable. On the other hand, as aforementioned, there is also the possibility that there are aspects of endorsement of a traditional male gender role that may be beneficial for firefighters. Thus, it is important to explore how masculinity and gender-role conflict impacts the psychological functioning of firefighters.

Theoretical Basis for Gender Role Conflict

Contemporary research on men and masculinity broadly seeks to understand how men experience life as men, with masculinity referring to the socially constructed values of the male gender (Good, Borst, & Wallace, 1994; Pleck, 1995). The Gender Role Strain Paradigm (Pleck, 1981; Pleck, 1995) is a framework for understanding the masculinity of men by recognizing the discrepancy between the traditional expectations placed on men and the strain on men that occurs as a result of these expectations. In this paradigm, Pleck (1981; 1995) identified how these restrictive masculine gender roles have potential negative impacts on psychological well-being. He identified three broad ways in which masculine socialization may impact males: (a) “gender role discrepancy” (i.e. failure to meet male role expectations), (b) “gender role trauma” (i.e. process of socialization or fulfillment of gender role is traumatic), and (c) “gender role dysfunction” (i.e. fulfillment of male role has negative side effects in different areas of one’s life) (Pleck, 1995).

Pleck's model provides the theoretical underpinnings for understanding two constructs of masculinity: masculinity ideology and gender role conflict.

Masculine ideology refers to the extent to which an individual endorses or internalizes culturally created belief systems about masculinity and masculine gender roles, as well as the importance he places on adhering to such belief systems and gender roles (Pleck, Sonenstein, & Ku, 1993; Pleck, 1995). Having restrictive beliefs about male gender role can result in dysfunction for men, both individually and interpersonally (O'Neil, 2008). Gender role conflict is the negative outcome that occurs when males either abide by or deviate from such restrictive masculine ideologies (O'Neil, Good, & Holmes, 1995). Thus, gender role conflict takes place when gender roles are rigid, restrictive, and sexist and therefore result in restriction, devaluation, or violation of others or oneself (O'Neil, 2008; O'Neil et al., 1995).

According to O'Neil and colleagues (1986; 1995; O'Neil, 2008), gender role conflict consists of four psychological domains, occurs in multiple situational contexts, and results in three personal experiences. These psychological domains are: (a) cognitive (i.e. thoughts about gender roles), (b) behavioral (i.e. behaviors resulting from gender roles), (c) affective (i.e. feelings about gender roles) and (d) unconscious (i.e. the way gender role affects behavior and influences conflicts outside of awareness). There are multiple situational contexts in which gender role conflict occurs, which can be summarized as occurring in four major contexts: gender roles transitions, intrapersonal, interpersonal, and originating in others (O'Neil, 2008). Finally, gender role conflict results in three personal experiences: (a) devaluation (i.e. critique of self or others due to degree of adherence to norms), (b) restrictions (i.e. confining oneself to stereotypic

masculinity ideology role norms), and (c) violation (i.e. harming self or others due to degree of adherence to norms). Thus, gender role conflict is complex and has potential far reaching effects in impacting the interpersonal, career, family, and health and of men (O'Neil, 2008).

The Gender Role Conflict Paradigm identifies empirically derived patterns of gender role conflict and is beneficial in identifying the occurrence and effects of gender role conflict (O'Neil et al., 1995). Within this paradigm, masculinity ideology and norms and gender role socialization are related to the fear of femininity. This fear of femininity is connected to the four identified patterns of gender role conflict that are the most crucial elements of gender role conflict for the purpose of this study: (a) Success, Power, Competition Issues (SPC), (b) Restrictive Emotionality (RE), (c) Restrictive Sexual and Affectionate Behavior Between Men (RABBM), and (d) Conflict Between Work and Leisure—Family Relations (CBWFR). Success, Power, and Competition Issues are inclusive of the chronic concern about career success, achievement, and competence. Restrictive Emotionality is the difficulty or fear of expressing one's feelings or basic emotions, while Restrictive Affectionate Behavior Between Men is a difficulty sharing thoughts, feelings, and physical touch with other men. Finally, Conflict Between Work and Leisure—Family Relations is described as a disconnection in balancing work and family relationships that lead to stress and health problems, among other things (O'Neil, 2008; O'Neil et al., 1995). These four patterns are measured by the Gender Role Conflict Scale (GRCS) and are the focus of the majority of research conducted on gender role conflict (O'Neil, 2008; O'Neil et al., 1995). In addition, measures that assess masculine conflicts and stresses have been found to predict male behaviors more directly than those

instruments that measure masculine ideology (Thompson, Pleck, & Ferrera, 1992). As such, gender role conflict and the four major patterns of gender role conflict will be the major construct for understanding the role of masculinity in the experience of firefighters.

In a review of the literature, O'Neil (2008) identified the research support of the relationship between gender role conflict and several intrapersonal variables including: depression, anxiety, stress, psychological well-being, and substance abuse. Of particular interest to firefighters is the significant relationship found between gender role conflict and physical and psychological strain (Stillson, 1988) as well as competition/comparison, performance failure, and physical inadequacy (Davenport, Hetzel, & Brooks, 1998). Apart from the intrapersonal effects, O'Neil's review identified several studies that recognized gender role conflict as significantly related to dysfunction in men's interpersonal arena including: marital dissatisfaction, intimacy, attachment problems, and self-disclosure. In evaluating interpersonal gender role conflict relationships, O'Neil (2008) identified six different studies that have relationships between problematic coping methods and gender role conflict, specifically in Restricting Emotion, Restrictive Affectionate Behavior Between Men, and Success, Power, and Competition (Bergen, 1997; Birthistle, 1999; Jones, 1998; Stanzione, 2005; Strom, 2004; Wester, Kuo, & Vogel, 2006). It is important to note that the majority of these studies on gender role conflict and coping are unpublished dissertations or international works and presentations that limit applicability. There is a relationship between gender role conflict and problematic coping, but how this relationship occurs has not been established. Consequently, O'Neil concludes that gender role conflict is related to psychological dysfunction in both the intrapersonal and interpersonal context.

While the majority of research studies support the relationship between gender role conflict and several aspects of psychological dysfunction, this relationship is still inconclusive because of limitations in research design and insignificant findings in some studies. It is important to note that some studies did not find significant relationships between gender role conflict and psychological outcome variables. O'Neil (2008) identified studies that did not find significant relationship between gender role conflict and (a) depression (Bursely, 1996; Good et al., 2004; Sharpe & Heppner, 1991), (b) psychological stress (Good et al., 2004), (c) anxiety, and (d) substance abuse (Bauman, 1998; Generali, 2002; Moore, 1993; Serna, 2004). Although these studies are numerically minimal, they provide further evidence that the relationship between gender role conflict and intrapersonal outcome variables requires further investigation.

The inconsistency in findings between gender role conflict and psychological outcomes also indicates that masculinity, identified by gender role conflict, may not always result in negative outcomes. Contrary to findings of the relationship between gender role conflict and psychological dysfunction, Levant (1995) identified several ways in which traditional male gender role socialization may be beneficial. Many of the attributes that Levant identified overlap with desirable attributes and requirements of firefighters such as: "willingness to withstand hardship and pain to protect others"; "loyalty, dedication, and commitment"; and the "abilities to solve problems, think logically, rely on himself, take risks, stay calm in the face of danger, and assert himself" (pg. 232). These positive attributes align well with the personality description provided by Kirschman (2004) and the outlined job requirements of a firefighter (U.S. Department of Labor, 2006). In a sample of Midwestern men recovering from spinal cord and

traumatic brain injuries, Good and colleagues (2006) found greater improvement one-year post hospitalization for men who endorsed certain masculine norms and the SPC factor of gender role conflict. This support of Levant (1995) and the partially supported findings of the relationship between gender role conflict and psychological dysfunction, provide further justification for investigating the nature of the relationship between gender role conflict and psychological functioning in firefighters.

Increasingly scholars in the area of gender have strongly argued for the need to examine mediating and moderating variables that may impact the role of gender role conflict on psychological outcome variables. For example, Good et al. (2004) argued that third variables need to be investigated that further explain the relationship between gender role conflict and psychological problems. In addition, Heppner (1995) and O'Neil (2008) recognized the need for studies to investigate possible mediating and moderating variables. According to Frazier, Tix, and Barron (2004), a relationship must be established between two variables before a third variable can be tested for mediation. Because of the variability in psychological outcomes in firefighter research, the unique work environment, and the inconsistent findings of the GRCS and psychological functioning, it is important to first establish the type of relationship that exists between GRCS and psychological outcomes for firefighters. Therefore, consistent with past research of the GRCS and appropriate mediational model testing, it is important to first determine the nature of the relationship between gender role conflict and psychological dysfunction and then identify potential third variable influences pertinent to firefighters.

Furthermore, the structure of the GRCS lends itself to being interpreted as a measure of masculine ideology that focuses on the potentially problematic impact of

prescribing to masculine gender roles. For example, O'Neil (2008) agrees with critics that the SPC factor likely assesses masculinity ideology or norms and only indirectly measures gender role conflict (Betz & Fitzgerald, 1993; Walker, Tokar, & Fischer, 2000). In addition, there is also some question whether the Conflict between Work and Leisure—Family Relations factor identifies conflict that is unique to males (Good et al., 1995; Walker et al., 2000), but O'Neil (2008) argues that several areas of distress (e.g., shame, anxiety, stress) are related to the CBWFR factor in men. It is also important to note that O'Neil (2008) asserts that the GRCS is a valid measure of male gender roles that are potentially, although not necessarily, dysfunctional. Consequently, the GRCS will be utilized in this study as a general measure of masculinity with an indirect purpose of identifying the conflict caused by strict gender roles. In framing the GRCS in this context, this study will not automatically assess firefighters who self-identify adherence to masculine gender roles as conflicted. Because of the unique nature of the sample in this study and the mixed results of the relationship between gender role conflict and psychological functioning, the GRCS and psychological outcome measures will be used in conjunction to determine whether adherence to strict gender roles is truly causing conflict in the form of psychological dysfunction. Rather than using a general measure of masculine ideology, the GRCS gives direct insight into the endorsement of gender roles that are typically dysfunctional for the individual. This allows one to more readily understand how mechanisms of coping, such as problem-solving, may impact the potentially damaging effects of adherence to these roles as well as the potential mediating effects of problem-solving appraisal on the relationship between gender role conflict and psychological outcomes.

Firefighters and Coping

Although individual variability in psychological outcomes may be explained through a variety of mechanisms, coping behaviors of firefighters are likely to be highly influential in the amount of psychological distress experienced as well as the impact of gender role conflict on psychological functioning. In looking at prevalence of PTSD, Del Ben and colleagues (2006) concluded that firefighters likely developed strategies for effectively coping with high stress or traumatic events. Whereas coping has been widely identified in the literature as impacting the overall well-being of individuals in a variety of career fields, operational definitions are varied and therefore limited. Within the firefighter literature, coping has been used to identify individual variables (e.g., amount of social support and number of years of service) as well as specific mechanisms of coping (e.g., alcohol consumption, type of coping in emotion versus problem-focused coping). It is also important to note that the majority of firefighter studies focused on coping have been conducted on international samples as well as within the context of trauma and not daily living (Black, 1997). Research specifically on firefighters has identified several individual variables that mediate the impacts of stress of firefighters on psychological distress including number of years of service, self-esteem, and locus of control (Brown, Mulhern, & Joseph, 2002; Chang et al, 2003; Cowman, Ferrari, Liao-Troth, 2004; Dean, Gow, & Shakespeare-Finch, 2003; Regeher, Hill, Knott, & Sault, 2003). Social support has been more thoroughly investigated as a third variable mediator of stress, or mechanism for coping (e.g., Bellrose & Pilisuk, 1991; Brown, Mulhern, & Joseph, 2002), with the stress-alleviating benefits of social support shown to be more individually determined (see Varvel et al., 2007). While these variables are important for

identifying the impact of stress on psychological functioning, they do not identify the mechanisms of actively coping utilized by firefighters.

Due to the unique nature of the job requirements and work environment, there are likely to be particular coping mechanisms endorsed by firefighters that are consistent with male gender-role norms. For example, North and colleagues (2002) identified relying on friends and family and using alcohol as the top two coping mechanisms endorsed by emergency personnel who responded to the Oklahoma City bombing. In a related study by North and colleagues (2002), the majority of post-trauma diagnosable psychiatric disorders of firefighters in the Oklahoma City bombing were also alcohol-related, consistent with prior findings of prevalence of alcohol use among a sample of firefighters not exposed to a large scale trauma (Boxer & Wild, 1993). While alcohol likely has cultural ties to the firefighting occupation, it is also likely that alcohol is used as a compensatory behavior to combat stress both in situations of trauma and daily living. Alcohol may therefore be used as a means to alleviate work-related stress. If used as a coping mechanism, it is not likely to be a positive contributor to overall psychological functioning. In addition, controlling emotions has been endorsed by firefighters as a coping mechanism for dealing with trauma or on-scene responses (Dyregrov & Mitchell, 1992; Stuhlmiller, 1994). The controlling of emotions may be beneficial during an emergency, but the same coping mechanism utilized in personal relationships may be counterproductive. Therefore, controlling of emotions may be beneficial in one context of the firefighter's functioning, but counterproductive in a different context. The use of alcohol and controlling of emotions as coping mechanisms is consistent with the

endorsement of masculine gender-roles and highlights the potential impacts of endorsing rigid gender-roles as identified by gender role conflict.

Whereas the role of gender role conflict on coping is pertinent, the majority of research on firefighter coping styles or mechanisms has seemingly ignored the nature of the work environment and the potential role of masculinity in firefighter coping. The vast majority of research that has sought to identify firefighter styles or types of coping has utilized approaches that are more emotion-focused, which is seemingly counterintuitive and inconsistent with the cultural environment of firefighting. Lazarus and Folkman's cognitive transactional theory of coping (1984) has been almost exclusively used in research on firefighters and coping (e.g., Black, 1997; Brown et al., 2002; Chang et al., 2003; Dudek & Koniarek, 2003). Within this model, Lazarus and Folkman identify two main categories of coping strategies: problem-focused coping (i.e. trying to augment the source of the stress) and emotion-focused coping (i.e. regulating associated stressful emotions to alleviate distress). Whereas the transactional theory of coping does contain an element identified as problem-focused coping, it is still identified as having a more emotional context of coping than other person-environment related approaches, such as problem-solving appraisal. In addition, the cognitive transactional theory of coping (Lazarus & Folkman, 1984) focuses on coping response to situations or events. Research on firefighters using this model have provided valuable information on coping styles endorsed by firefighters, but are limited in applicability due to the inconsistency of the model with the culture of firefighters.

Problem-solving appraisal is a person variable within the social-problem solving theory of D'Zurilla and colleagues (D'Zurilla, 1986; D'Zurilla & Goldfried, 1971;

D’Zurilla & Nezu, 1990) that is seemingly more consistent with the masculine environment of firefighters. Consistent with the cognitive transactional theory of coping, problem-solving appraisal focuses on the balance between the resources of the person and the demands of the environment (Heppner et al., 2004; Lazarus & Folkman, 1984). Contrary to Lazarus and Folkman, Heppner and colleagues (2004) identify several studies that support a strong relationship between positive problem-solving appraisal and problem-focused coping, concluding that the PSI is more closely related to problem-focused coping than emotion-focused coping. In addition, several of the valued characteristics of firefighters have a strong similarity with instrumentality. Instrumentality (formerly referred to as masculinity) identifies personality traits that are typically socially desirable for males in American culture, such as agency, self-efficacy, and assertiveness (Good et al., 1994; Spence, 1991). Pertinent to firefighters is the established relationship between positive problem-solving appraisal and high levels of instrumentality (Brems & Johnson, 1989; Heppner, Walther, & Good, 1995; McCracken & Weitzman, 1997; Nezu & Nezu, 1987; Wang, Heppner, & Berry, 1997). In a traditionally masculine oriented group such as firefighters, the traits of instrumentality are likely to be particularly valued. In addition, the PSI focuses on more global problem-solving appraisal (Heppner et al., 2004) and thus is pertinent to evaluating overall coping of firefighters in daily activity. As a result, problem-solving appraisal is deemed a more appropriate means of identifying coping in firefighters.

As a global measure of problem-solving appraisal, the Problem-Solving Inventory (PSI; Heppner, 1988; Heppner & Petersen, 1982) is appropriate for identifying problem-solving appraisal of firefighters in daily life. Heppner and colleagues (2004) identify

“problem-solving appraisal as a person variable within the global person-environment conceptualizations of coping...and is defined as a set of beliefs or expectancies about one’s problem solving abilities” (pg. 358). The PSI is an appraisal of one’s general problem-solving style and thus does not appraise problem-solving for specific problems or situations. It is a self-report measure of one’s capacity to solve problems and was created to operationalize problem-solving appraisal. The PSI consists of three factors: Problem Solving Confidence (PSC), Approach-Avoidance Style (AAS), and Personal Control (PC). PSC identifies a person’s beliefs, self-assurance, and trust to successfully cope with various problems. AAS recognizes an overall trend to approach or avoid various problem-solving activities. PC refers to one’s belief that he or she has control of his or her emotions and behaviors when dealing with problems. These three factors combine to form the overall problem-solving appraisal of the individual. While Heppner and colleagues (2004) recognize that research suggests a strong association between the PSI and problem-solving performance, they warn that the PSI should not be considered equivalent to problem-solving effectiveness.

In a review of the literature, Heppner and colleagues (2004) reported that the PSI has been found to be related to several aspects of psychological functioning. Several studies have supported the relationship between high PSI scores (i.e. self-appraisal as an ineffective problem solver) and greater general psychological maladjustment (Elliot, Herrick, & Witty, 1992; Hanson & Mintz, 1997; Heppner & Anderson, 1985; Heppner, Kampa, & Brunning, 1987). The relationship between ineffective problem-solving and depression has also been thoroughly established in the literature in a wide range of samples (see Heppner et al., 2004). Although to a lesser extent than depression, several

studies also support the relationship between high PSI scores and anxiety and worry. Heppner and colleagues (2004) identified that this relationship is consistently stronger between trait anxiety rather than state anxiety. This indirectly supports the PSI being a more general measure of problem-solving appraisal and not a specific situation measure. Based on the aforementioned utilized coping mechanisms of firefighters, the relationship between ineffective problem-solving appraisal and drinking/substance use is important (Godshall & Elliot, 1997; Heppner, Hibel, Neal, Weinstein, & Rabinowitz, 1982; Wright & Heppner, 1991). In addition, the relationship between physical health problems (Elliot & Marmarosh, 1994; Tracey, Sherry, & Keitel, 1986; Witty, Heppner, Bernard, & Thoreson, 2001), in particular cardiovascular issues (Heppner, Kampa, & Brunning, 1987) is particularly pertinent for firefighters whose leading cause of on-duty fatalities is cardiac complications. Thus, the PSI is effective in identifying the way problem-solving relates to psychological outcomes that are relevant for firefighters.

However, Heppner and colleagues (2004) recognize the relationship between problem-solving and various psychological variables may be more complex than is captured in correlational designs; several of the supportive studies are zero-correlation designs that somewhat limit application of results. For example, in regards to substance abuse, a lack of problem-solving and a tendency to avoid problems can both be related to drinking in order to escape problems (Williams & Kleinfelter, 1989). More sophisticated statistical analyses have revealed greater complexity between the PSI, the contained three factors, and psychological constructs. While examining a highly complex model (e.g., Witty et al., 2001) is not within the scope of this study, there is an identified need to

evaluate overall problem-solving as well as the three contained factors individually as they relate to psychological functioning.

There is currently no published literature that evaluates problem-solving appraisal, using the PSI, in a sample of firefighters. Consistent with research on firefighters and coping, identifying the problem-solving appraisal of firefighters and the consequent effects on psychological functioning will be beneficial to identify ways to diminish the effects of trauma and daily stressors on firefighters. One study conducted on United Kingdom firefighters investigated social problem-solving, stress, and psychological distress (Baker & Williams, 2001). Using the Cassidy-Long Problem-Solving Questionnaire to assess problem-solving appraisal (Cassidy & Long, 1996), higher stress was found to be related to lower problem-solving control and increased helplessness. In this study, the approach component of problem-solving appraisal accounted for significant variance in psychological distress in that firefighters who endorsed approaching problem situations experienced less psychological distress (Baker & Williams, 2001). This finding supports the potential importance of effective problem-solving impacting psychological outcomes in firefighters. While a promising individual variable, the research on the problem-solving of firefighters is minimal and therefore requires further inquiry.

Gender Role Conflict and Problem-Solving Appraisal

The relationship between gender role conflict and problem-solving appraisal is critical for gaining a comprehensive understanding of what contributes to the psychological functioning of firefighters. There is only one known published study that has evaluated gender role conflict and problem-solving appraisal using the GRCS and the

PSI (Good et al., 2004). In this study, Restrictive Emotionality was significantly related to problem-solving appraisal of approach-avoidance and low problem-solving confidence. Restrictive Emotionality is consistent with the firefighter literature and is likely to have consistent results in a sample of firefighters. Thus, this study highlights not only the relationship between PSI and gender role conflict, but also the potential impact of certain factors of the GRCS likely to be particularly salient for firefighters. In addition, Good and colleagues found the PSI accounted for a significant portion of the variance of measures of anxiety and depression, while gender role conflict only accounted for approximately one percent of the psychological outcome variance. With this limited research, it is difficult to determine the relationship between gender role conflict and the PSI. Consistent with the purpose of this study, Heppner and colleagues (2004) identified the need for more studies to evaluate the PSI and gender-related variables and O'Neil (2008) identified a need for more third variable studies of gender role conflict and psychological outcomes. However, the findings by Good and colleagues allude to a lack of relationship between PSI and gender role conflict, making it important to first test the relationship between gender role conflict and psychological outcomes before assessing a potential mediating relationship. Therefore, this study will seek to add to the psychological literature by first identifying the psychological functioning of an exclusive sample of firefighters, the masculinity of firefighters in the form of gender role conflict, and coping in the form of problem-solving appraisal, while also testing for correlational and mediational relationships between these variables.

Firefighters and Psychological Outcomes

To accurately assess psychological outcomes in firefighters, it is important to utilize measures that have been used with similar populations. The Outcome Questionnaire-45.2 (OQ-45; Lambert et al., 2004) has been used in a range of populations (from undergraduates to inpatients) as a general measure of psychological functioning. Consistent with the purpose in this study, one of the functions of the OQ-45 is to measure current level of distress. The OQ-45 contains three subscales: (a) symptom distress (SD), (b) interpersonal relations (IR), and (c) social role (SR). The SD subscale identifies thoughts and feelings associated with psychological disorders, while the IR subscale identifies level of functioning in significant relationships with others and the SR subscale identifies how the individual is functioning in life tasks (i.e., school, work).

The OQ-45 has been used in various studies to gauge therapeutic intervention effectiveness (e.g., Harmon et al., 2007; Lambert, Harmon, Slade, Whipple, & Hawkins, 2005) and monitor changes in symptoms (e.g., Lutz et al, 2006; Hannan et al, 2005; Hawkins, Lambert, Vermeersch, Slade, & Tuttle, 2004). There are currently no studies that have used the OQ-45 with a sample of firefighters, but research has been done using an Employee Assistance Program (EAP) sample and a general community sample (Lambert et al, 2004). With an extensive use of the OQ-45 in measuring psychological symptoms and outcomes, it is deemed a measure that will accurately measure psychological functioning in firefighters and will also contribute more information to the OQ-45 literature base.

REFERENCES

- Baker, S. R., & Williams, K. (2001). Short communication: Relation between social problem-solving appraisals, work stress and psychological distress in male firefighters. *Stress and Health, 17*, 219-229.
- Barbanel, L., Spielberg, W., Dattner, R., Goren, E., Millier, I. S., McGoldrick, T. J., et al. (Eds.). (2006). *The Firehouse Project: New York City Post 9/11*. New York: Springer Publishing Co.
- Bauman, W. L. (1998). *Gender role conflict, drinking motives, and alcohol consumption in undergraduate males*. Unpublished Master thesis, Washington University. Bellingham, Washington.
- Beaton, R., & Murphy, S. (1993). Sources of occupational stress among firefighters/EMTs and firefighter/paramedics and correlations with job-related outcomes. *Prehospital and Disaster Medicine, 8*, 140-150.
- Beaton, R., Murphy, S., Johnson, C., Pike, K., & Corneil, W. (1998). Exposure to duty-related incident stressors in urban firefighters and paramedics. *Journal of Traumatic Stress, 11*(4), 821-828.
- Beaton, R., Murphy, S., Pike, K., & Jarrett, M. (Eds.). (1995). *Stress-symptom factors in firefighters and paramedics*. Washington, D.C.: American Psychological Association.
- Bellrose, C. A., & Pilisuk, M. (1991). Vocational risk tolerance and perceptions of occupational hazards. *Basic and applied social psychology, 12*(3), 303-323.
- Bergen, D. J. (1997). Gender role conflict and coping: A preliminary investigation of college males. (Doctoral dissertation, University of North Carolina, 1997). *Dissertation Abstracts International, 57*, 5059.
- Betz, N. E., & Fitzgerald, L. (1993). Individuality and diversity: Theory and research in counseling psychology. *Annual Review of Psychology, 44*, 343-381.
- Birhistle, I. (1999). Male gender role conflict, coping skills, and hopelessness. *Eisteach, Irish Association for Counselling and Therapy, Summer*, 2-8.
- Black, L. K. (1997). How do firefighters cope? An investigation of coping strategies and symptoms of distress within the context of daily stressors. (Doctoral dissertation, 1997). *Dissertation Abstracts International, 57*, 5907.
- Boxer, P., & Wild, D. (1993). Psychological distress and alcohol abuse among fire fighters. *Scandinavia Journal of Work, Environment, and Health, 19*(2), 121-125.

- Brems, C., & Johnson, M. E. (1989). Problem-solving appraisal and coping style: The influence of sex-role orientation and gender. *The Journal of Psychology, 123*(2), 187-194.
- Brough, P. (2004). Comparing the influence of traumatic and organizational stressors on the psychological health of police, fire, and ambulance officers. *International Journal of Stress Management, 11*(3), 227-244.
- Brown, J., Mulhern, G., & Joseph, S. (2002). Incident-related stressors, locus of control, coping, and psychological distress among firefighters in Northern Ireland. *Journal of Traumatic Stress, 15*(2), 161-168.
- Bryant, R. A., & Harvey, A. G. (1996). Posttraumatic stress reactions in volunteer firefighters. *Journal of Traumatic Stress, 9*(1), 51-62.
- Bursley, K. H. (1996). Gender role strain and help seeking attitudes and behaviors in college men. (Doctoral dissertation, Virginia Commonwealth University, 1996). *Dissertation Abstracts International, 56*, 3884.
- Cassidy, T., & Long, C. (1996). Problem-solving style, stress and psychological illness: Development of a multifactorial measure. *British Journal of Clinical Psychology, 35*, 265-277.
- Chang, C., Lee, L., Connor, K. M., Davidson, J. R. T., Jeffries, K., & Lai, T. (2003). Posttraumatic distress and coping strategies among rescue workers after an earthquake. *Journal of Nervous and Mental Disease, 191*(6), 391-398.
- Clohessy, S., & Ehlers, A. (1999). PTSD symptoms, response to intrusive memories and coping in ambulance workers. *British Journal of Clinical Psychology, 38*, 251-265.
- Cowman, S. E., Ferrari, J. R., & Liao-Troth, M. (2004). Mediating effects of social support on firefighters' sense of community and perceptions of care. *Journal of Community Psychology, 32*(2), 121-126.
- Davenport, D. S., Hetzel, R. D., & Brooks, G. R. (1998, August). *Concurrent validity analysis of two measures of gender role strain*. Paper presented at the annual meeting of the American Psychological Association, San Francisco, CA.
- D'Zurilla, T. J. (1986). *Problem-solving therapy: A social competence approach to clinical intervention*. New York: Springer.
- D'Zurilla, T. J., & Goldfried, M. R. (1971). Problem solving and behavior modification. *Journal of Abnormal Psychology, 78*, 107-126.

- D'Zurilla, T. J., & Nezu, A. M. (1990). Development and preliminary evaluation of the Social Problem-Solving Inventory. *Psychological Assessment, 2*, 156-163.
- Dean, P. G., Gow, K. M., & Shakespeare-Finch, J. (2003). Counting the cost: Psychological distress in career and auxiliary firefighters. *Australasian Journal of Disaster and Trauma Studies, 2003*(1).
- Del Ben, K. S., Scotti, J. R., Chen, Y., & Fortson, B. L. (2006). Prevalence of posttraumatic stress disorder symptoms in firefighters. *Work & Stress, 20*(1), 37-48.
- Dudek, B., & Koniarek, J. (2003). Coping style and the development of posttraumatic stress disorder symptoms. *Polish Psychological Bulletin, 34*(2), 59-65.
- Dyregrov, A., & Mitchell, J. T. (1992). Work with traumatized children: Psychological effects and coping strategies. *Journal of Traumatic Stress, 5*(1), 5-17.
- Elliot, T. R., Herrick, S. M., & Witty, T. E. (1992). Problem-solving appraisal and the effects of social support among college students and persons with physical disabilities. *Journal of Counseling Psychology, 39*, 219-226.
- Elliot, T. R., & Marmarosh, C. L. (1994). Problem-solving appraisal, health complaints, and health-related expectancies. *Journal of Counseling and Development, 72*, 531-537.
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*(1), 115-134.
- Generali, M. M. (2002). Gender role conflict and help seeking attitudes among males referred for alcohol abuse treatment: A comparison of self versus mandatory referral. (Doctoral dissertation, University of Connecticut, 2002). *Dissertation Abstracts International, 58*, 1599.
- Godshall, F. J., & Elliot, T. R. (1997). Behavioral correlates of self-appraisal problem-solving ability: Problem-solving skills and health-compromising behaviors. *Journal of Applied Social Psychology, 27*, 929-944.
- Good, G. E., Borst, T. S., & Wallace, D. L. (1994). Masculinity research: A review and critique. *Applied & Preventive Psychology, 3*, 3-14.
- Good, G. E., Heppner, P. P., DeBord, K. A., & Fischer, A. R. (2004). Understanding men's psychological distress: Contributions of problem-solving appraisal and masculine role conflict. *Psychology of Men & Masculinity, 5*(2), 168-177.

- Good, G. E., Roberston, J. M., O'Neil, J. M., Fitzgerald, L. F., Stevens, M., DeBord, K. A., et al. (1995). Male gender role conflict: Psychometric issues and relations to psychological distress. *Journal of Counseling Psychology, 42*, 3-10.
- Good, G. E., Schopp, L. H., Thomson, D., Hathaway, S., Sanford-Martens, T., Mazurek, M. O., et al. (2006). Masculine roles and rehabilitation outcomes among men recovering from serious injuries. *Psychology of Men & Masculinity, 7*(3), 165-176.
- Greene, P., Kane, D., Christ, G., Lynch, S., & Corrigan, M. (2006). *FDNY crisis counseling: Innovative responses to 9/11 firefighters, families, and communities*. New York: John Wiley & Sons Ltd.
- Hagh-Shenas, H., Goodarzi, M. A., Dehbozorgi, G., & Farashbandi, H. (2005). Psychological consequences of the Bam earthquake on professional and nonprofessional helpers. *Journal of Traumatic Stress, 18*(5), 477-283.
- Hannan, C., Lambert, M. J., Harmon, C., Nielson, S. L., Smart, D. M., Shimokawa, K., & Sutton, S. W. (2005). A lab test and algorithms for identifying patients at risk for treatment failure. *Journal of Clinical Psychology: In Session, 61*(2), 155-163.
- Hanson, K. M., & Mintz, L. B. (1997). Psychological health and problem-solving appraisal in older adults. *Journal of Counseling Psychology, 44*, 433-441.
- Harmon, S. C., Lambert, M. J., Smart, D. W., Hawkins, E. J., Nielsen, S. L., & Slade, K. (2007). Enhancing outcome for potential treatment failures: Therapist/client feedback and clinical support tools. *Psychotherapy Research, 17*(4), 379-392.
- Haslam, C., & Mallon, K. (2003). A preliminary investigation of post-traumatic stress symptoms among firefighters. *Work & Stress, 17*, 277-285.
- Hawkins, E. J., Lambert, M. J., Vermeersch, D. A., Slade, K., & Tuttle, K. (2004). The therapeutic effects of providing client progress information to patients and therapists. *Psychotherapy Research, 10*, 308-327.
- Heppner, P. P. (1988). *The problem solving inventory (PSI): Manual*. Palo Alto, CA: Consulting Psychologists.
- Heppner, P. P. (1995). On gender role conflict in men: Future directions and implications for counseling. *Journal of Counseling Psychology, 42*, 20-23.
- Heppner, P. P., & Anderson, W. P. (1985). On the perceived non-utility of research in counseling. *Journal of Counseling and Development, 63*, 545-547.

- Heppner, P. P., Hibel, J. H., Neal, G. W., Weinstein, C. L., & Rabinowitz, F. E. (1982). Personal problem-solving: A descriptive study of individual differences. *Journal of Counseling Psychology, 24*, 580-590.
- Heppner, P. P., Kampa, M., & Brunning, L. (1987). The relationship between problem solving self-appraisal and indices of physical and psychological health. *Cognitive Therapy and Research, 11*, 155-168.
- Heppner, P. P., & Petersen, C. H. (1982). The development and implications of a personal problem-solving inventory. *Journal of Counseling Psychology, 29*, 66-75.
- Heppner, P. P., Walther, D. J., & Good, G. E. (1995). The differential role of instrumentality, expressivity, and social support in predicting problem-solving appraisal in men and women. *Sex Roles, 32*, 91-108.
- Heppner, P. P., Witty, T. E., & Dixon, W. A. (2004). Problem-solving appraisal and human adjustment: A review of 20 years of research using the problem solving inventory. *The Counseling Psychologist, 32*(3), 344-428.
- Hildebrand, J. (1984). Stress Research (part 2). *Fire Command, 51*, 55-58.
- Jones, D. A. (1998). Gender role conflict, coping, and psychological distress in gay men. (Doctoral dissertation, Ohio State University). *Dissertation Abstracts International, 59*, 4468.
- Kaprow, M. L. (1991). Magical Work: Firefighters in New York. *Human Organization, 50*(1), 97-103.
- Kirschman, E. (2004). *I Love a Firefighter*. New York: The Guilford Press.
- Kop, N., Euwema, M., & Schaufeli, W. (1999). Burnout, job stress and violent behaviour among Dutch police. *Work & Stress, 13*(4), 326-340.
- Lambert, M. J., Morton, J. J., Hatfield, D., Harmon, C., Hamilton, S., Reid, R. C., Shimokawa, K., Christopherson, C., & Burlingame, G. M. (2004). *Administration and scoring manual for the OQ-45.2 (Outcome Measures)*. Orem, UT. American Professional Credentialing Services.
- Lambert, M. J., Harmon, C., Slade, K., Whipple, J. L., & Hawkins, E. J. (2005). Providing feedback to psychotherapists on their patients' progress: Clinical results and practice suggestions. *Journal of Clinical Psychology: In Session, 61*(2), 165-174.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

- Levant, R. F. (1995). Toward the reconstruction of masculinity. In R. F. Levant & W. S. Pollack (Eds.), *A new psychology of men*. New York: Basic Books.
- Lutz, W., Lambert, M. J., Harmon, S. C., Stulz, N., Tschitsaz, A., & Schürch, E. (2006). The probability of treatment success, failure, and duration—What can be learned from empirical data to support decision making in clinical practice? *Clinical Psychology and Psychotherapy*, *13*, 223-232.
- Marmar, C. R., Weiss, D. S., Metzler, T. J., Ronfeldt, H. M., & Foreman, C. (1996). Stress responses of emergency services personnel to the Loma Prieta earthquake interstate 880 freeway collapse and control traumatic incidents. *Journal of Traumatic Stress*, *9*, 63-85.
- McCracken, R. S., & Weitzman, L. M. (1997). Relationship of personal agency, problem-solving appraisal, and traditionality of career choice to women's attitudes toward multiple role planning. *Journal of Counseling Psychology*, *44*, 149-159.
- Miller, L. (1995). Tough guys: Psychotherapeutic strategies with law enforcement and emergency services personnel. *Psychotherapy*, *32*(4), 592-600.
- Moore, C. M. (1993). A study of male sex-role attitudes and self-concept differences between alcoholics and non-alcoholics and the effects of a psychoeducation group on these variables and subsequent relapse rates. (Doctoral dissertation, University of Texas-Austin, 1993). *Dissertation Abstracts International*, *54*, 2215.
- Murphy, S., Beaton, R., Cain, K., & Pike, K. (1994). Gender differences in fire fighter job stressors and symptoms of stress. *Women & Health*, *22*(2), 55-69.
- National Fire Protection Association [NFPA] (2005). *Research & Reports Fire Statistics: The U.S. Fire Service*. Retrieved April 8, 2007, from www.nfpa.org.
- Nezu, A. M., & Nezu, C. M. (1987). Psychological distress, problem solving, and coping reactions: Sex role differences. *Sex Roles*, *16*, 205-215.
- Nixon, S. J., Schorr, J., Boudreaux, A., & Vincent, R. D. (1999). Perceived sources of support and their effectiveness for Oklahoma City firefighters. *Psychiatric Annals*, *29*(2), 101- 105.
- North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Cox, J., Spitznagel, E. L., et al. (2002). Coping, functioning, and adjustment of rescue workers after the Oklahoma City bombing. *Journal of Traumatic Stress*, *15*(3), 171-175.
- North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Spitznagel, E. L., Cox, J., et al. (2002). Psychiatric disorders in rescue workers after the Oklahoma City bombing. *American Journal of Psychiatry*, *159*(5), 857-859.

- O'Neil, J. M. (1981). Patterns of gender role conflict and strain: Sexism and fear of femininity in men's lives. *Personnel and Guidance Journal*, 60, 203-210.
- O'Neil, J. M. (2008). Summarizing Twenty-five years of research on men's gender-role conflict using the gender role conflict scale: New research paradigms and clinical implications. *The Counseling Psychologist*, 36(3), 358-445.
- O'Neil, J. M., Good, G. E., & Holmes, S. (1995). Fifteen years of theory and research on men's gender role conflict: New paradigms for empirical research. In R. F. Levant & W. S. Pollack (Eds.), *A new psychology of men* (pp. 164-206). New York: Basic Books.
- O'Neil, J. M., Helms, B., Gable, R. K., David, L., & Wrightsman, L. S. (1986). Gender role conflict scale (GRCS): College men's fears of femininity. *Sex Roles*, 14, 335-250.
- Orris, P., Melius, J., & Duffy, R. (Eds.). (1995). *Occupational medicine: Firefighters' safety and health* (Vol. 10). Philadelphia: Hanley & Belfus.
- Pituch, K. A., Whittaker, T. A., & Stapleton, L. M. (2005). A comparison of methods to test for mediation in multisite experiments. *Multivariate Behavioral Research*, 40(1), 1-23.
- Pleck, J. H. (1981). *The myth of masculinity*. Cambridge, MA: MIT Press.
- Pleck, J. H. (1995). The Gender Role Strain Paradigm: An Update. In R. F. Levant & W. S. Pollack (Eds.), *A New Psychology of Men* (pp. 11-32). New York: Basic Books.
- Pleck, J. H., Sonenstein, F. L., & Ku, L. C. (1993). Masculinity ideology and its correlates. In S. Oskamp & M. Costanzo (Eds.), *Gender issues in social psychology* (pp. 85-110). Newbury Park, CA: Sage.
- Regehr, C., Hill, J., Knott, T., & Sault, B. (2003). Social support, self-efficacy and trauma in new recruits and experienced firefighters. *Journal of the International Society for the Investigation of Stress*, 19(4), 189-193.
- Schorr, J. K., & Boudreaux, A. S. (2005). Responding to terrorism in the USA: Firefighters share experiences in their own words. *Journal of Aggression, Maltreatment & Trauma*, 10(1-2), 577-589.
- Scott, C., & Myers, K. K. (2005). The socialization of emotion: Learning emotion management at the fire station. *Journal of Applied Communication Research*, 33(1), 67-92.

- Serna, G. S. (2004). The confounding role of personality in the relation to gender role conflict and substance abuse and sexual aggression against women (Doctoral dissertation, University of Akron, 2003). *Dissertation Abstracts International*, 65, 1064.
- Sharpe, M. J., & Heppner, P. P. (1991). Gender role, gender role conflict, and psychological well-being in men. *Journal of Counseling Psychology*, 38, 323-330.
- Spence, J. T. (1991). Do the BSRI and PAQ measure the same or different concepts? *Psychology of Women Quarterly*, 15, 141-165.
- Stanzione, D. (2005). Male gender role strain, coping, and college adjustment. (Doctoral dissertation, Rutgers The State University of New Jersey-New Brunswick, 2005). *Dissertation Abstracts International*, 66, 2317.
- Stillson, R. W. (1988). Gender role conflict in adult men: A study of predictive variables. (Doctoral Dissertation, University of Connecticut, 1998). *Dissertation Abstracts International*, 50, 366.
- Strom, T. (2004, July). Gender role conflict and dispositional coping styles in college age men. In J. M. O'Neil & G. E. Good (Chairs), *Gender role conflict research: Four empirical studies and new research paradigm*. Symposium conducted at American Psychological Association convention, Honolulu, HI.
- Stuhlmiller, C. M. (1994). Occupational meanings and coping practices of rescue workers in an earthquake disaster. *Western Journal of Nursing Research*, 16(3), 268-287.
- Takeyama, H., Itani, T., Tachi, N., Sakamura, O., Murata, K., Inoue, T., et al. (2005). Effects of shift schedule on fatigue and physiological functioning among firefighters during night duty. *Ergonomics*, 48(1), 1-11.
- Thompson, E. H., Pleck, J. H., & Ferrera, D. L. (1992). Men and masculinity: Scales for masculinity ideology and masculinity-related constructs. *Sex Roles*, 27(11/12), 573-607.
- Tracey, T. J., Sherry, P., & Keitel, M. (1986). Distress and help-seeking as a function of person-environment fit and self-efficacy: A causal model. *American Journal of Community Psychology*, 14, 657-676.
- U. S. Department of Labor, Bureau of Labor Statistics (n.d.). Occupational Outlook Handbook, 2006-2007 Edition, Firefighting Occupations. Retrieved April 8, 2007, from <http://www.bls.gov/oco/ocos158.htm>

- Varvel, S. J., He, Y., Tager, D., Bledman, R. A., Chaichanasakul, A., Mendoza, M. M., et al. (2007). Multidimensional, Threshold Effects of Social Support in Firefighters: Is more support invariably better? *Journal of Counseling Psychology, 54*(4), 458-465.
- Walker, D. F., Tokar, D. M., & Fischer, A. R. (2000). What are the eight popular masculinity-related instruments? Underlying dimensions and their relations to sociosexuality. *Psychology of Men & Masculinity, 1*, 98-108.
- Wang, L., Heppner, P. P., & Berry, T. R. (1997). Role of gender-related personality traits, problem-solving appraisal, and perceived social support in developing a mediational model of psychological adjustment. *Journal of Counseling Psychology, 44*, 245-255.
- Wester, S. R., Kuo, B. C., & Vogel, D. C. (2006). Multicultural coping: Chinese Canadian adolescents, male gender role conflict, and psychological distress. *Psychology of Men and Masculinity, 7*, 83-100.
- Williams, J. G., & Kleinfelter, K. J. (1989). Perceived problem-solving skills and drinking patterns among college students. *Psychological Reports, 65*, 1235-1244.
- Witty, T. E., Heppner, P. P., Bernard, C. B., & Thoreson, R. W. (2001). Problem solving appraisal and psychological adjustment of chronic low back pain patients. *Journal of Clinical Psychology in Medical Settings, 8*, 149-160.
- Wright, D. M., & Heppner, P. P. (1991). Coping among nonclinical college-age children of alcoholics. *Journal of Counseling Psychology, 38*, 565-5.

APPENDIX II: STUDY MATERIALS

INFORMED CONSENT

SCRIPT TO INTRODUCE STUDY

DEBRIEFING FORM

INFORMED CONSENT

Thank you for considering participation in this survey. Your consent to participate provides an opportunity to share your experiences as a firefighter and contribute to the study of workplace environment and the well-being of professionals in stressful occupations. To participate in this study, please read the following information:

Terms and conditions of participating in the survey:

As a participant in this project, please be aware of the following:

1. The survey is anonymous. Because we never ask you to report your name or other identifying information, no data or reports can be linked to you personally. All final reports of our findings will be based on average responses across many individuals and not on individual “case reports”.
2. Your participation is voluntary. We ask you to separate from your fellow firefighters while filling out the survey to protect your anonymity. You may stop at any moment and may decline to answer any question. There is no penalty if you decide you do not wish to participate. If you choose not to participate, we ask you to place your incomplete survey in the envelope provided and hand it to an investigator at the end of the survey administration. You may also indicate you do not wish to participate by writing NOT ME on the first page of your survey. As the primary purpose of this study is to investigate variables unique to males, female responses will be excluded from final analyses.
3. Your participation involves first, reading this form carefully. Second, if you choose to participate, you will fill out the survey and read the debriefing page at the end. The final step is for you to place your survey in the blank envelope and hand that envelope to an investigator. Completion of all these steps indicates your consent to participate in this survey. Your participation will take up to 30 minutes of your time.

Benefits and Risks

1. The benefits of this study include contributing to a greater understanding of the elements that contribute to a positive working environment and the well-being of professionals who work in stressful occupations.
2. The risks of participating in this study are no greater than those experienced in daily life, but may include discomfort with answering questions about personal life or reflecting on difficult issues, such as negative feelings.

If you have further questions or you would like to receive a report on the final results of the survey, which will be based on the average responses of all respondents, and not on your individual answers, please contact Shiloh Jordan Varvel at sej7vc@mizzou.edu. This project has been approved by the Institutional Review Board of the University of Missouri-Columbia. If you wish to communicate with the IRB, you may reach them at (573) 882-9585 or write them at umcresearchirb@missouri.edu. This research is being conducted by Shiloh Jordan Varvel as a part of her dissertation for her doctoral work.

PLEASE SEPARATE THIS SHEET AND KEEP IT FOR YOUR RECORD

SCRIPT TO INTRODUCE STUDY

Thanks for your time. We are researchers at MU who are interested in gaining information from you about your experience as firefighters. We know that you have unique experiences as firefighters that are different from people in other occupations. We also know that not much research has been done to understand the unique experience of being firefighters and members of fire personnel. For this reason, we feel it is really important for us to learn from you about aspects of your job. As some of you may remember, we conducted a previous study in April 2006. It has been accepted for publication. Your previous participation provided valuable information that will likely benefit other firefighters on the national level.

We are conducting the current study to explore the impact of individual factors, such as problem-solving, on individuals in high stress jobs. Your participation in this study will help in the process of assessing factors that contribute to positive work environments and job satisfaction for professional firefighters and other first-responders. The ultimate goal is to increase our knowledge about how best to support professionals who risk their lives for their fellow citizens.

We are conducting this study separate from the CFD administration. The fire department administration will not have access to your individual responses. All of your responses are anonymous in that your names or any identifying information is not attached to your responses. We ask that you respond as honestly as you can in order to ensure that we gather accurate information. Your participation is voluntary and you may stop participating at any time.

Please read the consent form we have provided, which lists the nature of the study and our responsibilities to you. If you would like to participate, please fill out the survey and put it in the provided envelope.

DEBRIEFING FORM

Thank you for participating in this survey of firefighters, gender role, problem solving appraisal, and psychological well-being. This study is designed to explore the impact of gender role beliefs and problem solving appraisal on individuals in high stress jobs. Your participation in this study will help in the process of assessing factors that contribute to positive work environments and satisfaction for professional firefighters and other first-responders. As with other research we have conducted with the department, the ultimate goal of this research is to increase our knowledge about how best to support professionals who risk their lives for their fellow citizens.

For those interested in more specifics, gender role beliefs identify those beliefs individuals hold related to their gender. In addition, problem solving appraisal is a self-assessment of one's own general problem solving style. Effective problem-solving is related to positive psychological functioning, lower levels of stress, and greater levels of satisfaction. Because of the nature of the job requirements, effective problem-solving may be particularly important for the well-being of firefighters. The three factors of problem-solving assessed in this study are:

- Problem-Solving Confidence: person's beliefs, self-assurance, and trust to successfully cope with various problems
- Approach-Avoidance Style: trend to approach or avoid various problem-solving activities
- Personal Control: refers to one's belief that he or she has control of his or her emotions and behaviors when dealing with problems.

Your participation in this survey means we no longer have to guess, because your answers will tell us what is most important for you. Our hope is that the results then become valuable information for fire departments and other first-responders, who might design training to increase effective problem-solving that positively influences well-being.

If you have any questions or are interested in the results of this survey, which should be available by December, 2007, you may contact Shiloh Jordan Varvel at sej7vc@mizzou.edu.

APPENDIX III: MEASURES

Demographic information

Gender role conflict scale

Problem solving inventory

Outcome questionnaire-45.2

DEMOGRAPHIC INFORMATION

Directions – Please tell us a bit about yourself and your job by responding to the following items. If you are concerned that an item might reveal your identity, then please leave that item blank:

1. Age _____
2. Sex: _____ M _____ F
3. Current Relationship Status:
 _____ Single
 _____ Married
 _____ Involved in a long-term relationship, but not currently married
4. Years of Service as a Firefighter (both career & volunteer)
 _____ Years
5. Rank:
 _____ Firefighter/Engineer
 _____ Officer
6. Number of Alcoholic Beverages Consumed Per Week
 _____ # of beverages
8. Number of Cigarettes Smoked Per Week
 _____ # of cigarettes

GENDER ROLE CONFLICT SCALE (GRCS)—Abbreviated Version

Directions: Please circle the phrase that most closely represents the extent that you Agree or Disagree with each statement below. There is no right or wrong answer to each statement. Your own reaction is what is asked for.

1.	Moving up the career ladder is important to me.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
2.	I have difficulty telling others I care about them.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
3.	I feel torn between my hectic work schedule and caring for my health.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
4.	Making money is part of my idea of being a successful man.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
5.	Strong emotions are difficult for me to understand.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
6.	I sometimes define my personal value by my career success.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
7.	Expressing feelings makes me feel open to attack by other people.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
8.	Expressing my emotions to other men is risky.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
9.	My career, job, or school affects the quality of my leisure time or family life.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
10.	I evaluate other people's value by their level of achievement and success.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree

11.	Talking (about my feelings) during sexual relations is difficult for me.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
12.	I worry about failing and how it will affect me as a man.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
13.	I have difficulty expressing my emotional needs to my partner.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
14.	Finding time to relax is difficult for me.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
15.	Doing well all the time is important to me.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
16.	I have difficulty expressing my tender feelings.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
17.	Hugging other men is difficult for me.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
18.	I often feel that I need to be in charge of others around me.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
19.	Telling others of my strong feelings is not part of my sexual behavior.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
20.	Competing with others is the best way to succeed.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
21.	Winning is a measure of my value and personal worth.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
22.	I often have trouble finding words that describe how I am feeling.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree

23.	I am sometimes hesitant to show my affection to other men.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
24.	My needs to work or study keep me from my family or leisure more than I would like.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
25.	I strive to be more successful than others.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
26.	I do not like to show my emotions to other people.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
27.	Telling my partner my feelings about him/her during sex is difficult for me.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
28.	My work or school often disrupts other parts of my life (home, health, leisure).	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
29.	I am often concerned about how others evaluate my performance at work or school.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
30.	Being very personal with other men makes me feel uncomfortable.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
31.	Being smarter or physically stronger than other men is important to me.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
32.	Overwork and stress caused by a need to achieve on the job or in school affects or hurts my life.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree
33.	I like to feel superior to other people.	Strongly Disagree	Moderately Disagree	Mildly Disagree	Mildly Agree	Moderately Agree	Strongly Agree

THE PROBLEM SOLVING INVENTORY (PSI)

Directions: People respond to personal problems in different ways. The statements on this inventory deal with how people react to personal difficulties and problems in their day-to-day life. The term “problems” refers to personal problems that everyone experiences at times, such as depression, inability to get along with friends, choosing a vocation, or deciding whether to get a divorce. Please respond to the items as honestly as possible so as to most accurately portray how *you* handle such personal problems. Your responses should reflect what you *actually* do to solve problems, not how you think you *should* solve them. When you read an item, ask yourself: Do I ever behave this way? Please answer every item.

Read each statement and indicate the extent to which you agree or disagree with that statement, using the scale provided. Mark your responses by circling the number to the right of each statement.

	1	2	3	4	5	6
	Strongly Agree	Moderately Agree	Slightly Agree	Slightly Disagree	Moderately Disagree	Strongly Disagree
1. When a solution to a problem has failed, I do not examine why it didn't work.	1	2	3	4	5	6
2. When I am confronted with a complex problem, I don't take the time to develop a strategy for collecting information that will help define the nature of the problem.	1	2	3	4	5	6
3. When my first efforts to solve a problem fail, I become uneasy about my ability to handle the situation.	1	2	3	4	5	6
4. After I solve a problem, I do not analyze what went right and what went wrong.	1	2	3	4	5	6
5. I am usually able to think of creative and effective alternatives to my problems.	1	2	3	4	5	6
6. After following a course of action to solve a problem, I compare the actual outcome with the one I had anticipated.	1	2	3	4	5	6
7. When I have a problem, I think of as many possible ways to handle it as I can until I can't come up with any more ideas.	1	2	3	4	5	6
8. When confronted with a problem, I consistently examine my feelings to find out what is going on in a problem situation.	1	2	3	4	5	6
9. When confused about a problem, I don't clarify vague ideas or feelings by thinking of them in concrete terms.	1	2	3	4	5	6
10. I have the ability to solve most problems even though initially no solution is immediately apparent.	1	2	3	4	5	6
11. Many of the problems I face are too complex for me to solve.	1	2	3	4	5	6
12. When solving a problem, I make decisions that I am happy with later.	1	2	3	4	5	6
13. When confronted with a problem, I tend to do the first thing that I can think of to solve it.	1	2	3	4	5	6

1 Strongly Agree	2 Moderately Agree	3 Slightly Agree	4 Slightly Disagree	5 Moderately Disagree	6 Strongly Disagree
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14. Sometimes I do not stop and take time to deal with my problems, but just kind of muddle ahead.	1	2	3	4	5	6
15. When considering solutions to a problem, I do not take the time to assess the potential success of each alternative.	1	2	3	4	5	6
16. When confronted with a problem, I stop and think about it before deciding on a next step.	1	2	3	4	5	6
17. I generally act on the first idea that comes to mind in solving a problem.	1	2	3	4	5	6
18. When making a decision, I compare alternatives and weigh the consequences of one against the other.	1	2	3	4	5	6
19. When I make plans to solve a problem, I am almost certain that I can make them work.	1	2	3	4	5	6
20. I try to predict the result of a particular course of action.	1	2	3	4	5	6
21. When I try to think of possible solutions to a problem, I do not come up with very many alternatives.	1	2	3	4	5	6
22. When trying to solve a problem, one strategy I often use is to think of past problems that have been similar.	1	2	3	4	5	6
23. Given enough time and effort, I believe I can solve most problems that confront me.	1	2	3	4	5	6
24. When faced with a novel situation, I have confidence that I can handle problems that may arise.	1	2	3	4	5	6
25. Even though I work on a problem, sometimes I feel like I'm groping or wandering and not getting down to the real issue.	1	2	3	4	5	6
26. I make snap judgments and later regret them.	1	2	3	4	5	6
27. I trust my ability to solve new and difficult problems.	1	2	3	4	5	6
28. I use a systematic method to compare alternatives and make decisions.	1	2	3	4	5	6
29. When thinking of ways to handle a problem, I seldom combine ideas from various alternatives to arrive at a workable solution.	1	2	3	4	5	6
30. When faced with a problem, I seldom assess the external forces that may be contributing to the problem.	1	2	3	4	5	6
31. When confronted with a problem, I usually first survey the situation to determine the relevant information.	1	2	3	4	5	6
32. There are times when I become so emotionally charged that I can no longer see the alternatives for solving a particular problem.	1	2	3	4	5	6
33. After making a decision, the actual outcome is usually similar to what I had anticipated.	1	2	3	4	5	6
34. When confronted with a problem, I am unsure of whether I can handle the situation.	1	2	3	4	5	6
35. When I become aware of a problem, one of the first things I do is try to find out exactly what the problem is.	1	2	3	4	5	6

Outcome Questionnaire (OQ-45.2)

Directions: Looking back **over the last week**, including today, help us understand how you have been feeling. Read each item and mark the answer that best describes your current situation.

1.	I get along well with others.	Never	Rarely	Sometimes	Frequently	Almost Always
2.	I tire quickly.	Never	Rarely	Sometimes	Frequently	Almost Always
3.	I feel no interest in things.	Never	Rarely	Sometimes	Frequently	Almost Always
4.	I feel stressed at work/school.	Never	Rarely	Sometimes	Frequently	Almost Always
5.	I blame myself for things.	Never	Rarely	Sometimes	Frequently	Almost Always
6.	I feel irritated.	Never	Rarely	Sometimes	Frequently	Almost Always
7.	I feel unhappy in my marriage/significant relationship.	Never	Rarely	Sometimes	Frequently	Almost Always
8.	I have thoughts of ending my life.	Never	Rarely	Sometimes	Frequently	Almost Always
9.	I feel weak.	Never	Rarely	Sometimes	Frequently	Almost Always
10.	I feel fearful.	Never	Rarely	Sometimes	Frequently	Almost Always
11.	After a night of heavy drinking, I need a drink the next morning to get going. (If you do not drink, circle “never”)	Never	Rarely	Sometimes	Frequently	Almost Always
12.	I find my work/school satisfying.	Never	Rarely	Sometimes	Frequently	Almost Always
13.	I am a happy person.	Never	Rarely	Sometimes	Frequently	Almost Always
14.	I work/study too much.	Never	Rarely	Sometimes	Frequently	Almost Always
15.	I feel worthless.	Never	Rarely	Sometimes	Frequently	Almost Always

16.	I am concerned about family troubles.	Never	Rarely	Sometimes	Frequently	Almost Always
17.	I have an unfulfilling sex life.	Never	Rarely	Sometimes	Frequently	Almost Always
18.	I feel lonely.	Never	Rarely	Sometimes	Frequently	Almost Always
19.	I have frequent arguments.	Never	Rarely	Sometimes	Frequently	Almost Always
20.	I feel loved and wanted.	Never	Rarely	Sometimes	Frequently	Almost Always
21.	I enjoy my spare time.	Never	Rarely	Sometimes	Frequently	Almost Always
22.	I have difficulty concentrating.	Never	Rarely	Sometimes	Frequently	Almost Always
23.	I feel hopeless about the future.	Never	Rarely	Sometimes	Frequently	Almost Always
24.	I like myself.	Never	Rarely	Sometimes	Frequently	Almost Always
25.	Disturbing thoughts come into my mind that I cannot get rid of.	Never	Rarely	Sometimes	Frequently	Almost Always
26.	I feel annoyed by people who criticize my drinking (or drug use). (If not applicable, mark "Never.")	Never	Rarely	Sometimes	Frequently	Almost Always
27.	I have an upset stomach.	Never	Rarely	Sometimes	Frequently	Almost Always
28.	I am not working/studying as well as I used to.	Never	Rarely	Sometimes	Frequently	Almost Always
29.	My heart pounds too much.	Never	Rarely	Sometimes	Frequently	Almost Always
30.	I have trouble getting along with friends and close acquaintances.	Never	Rarely	Sometimes	Frequently	Almost Always
31.	I am satisfied with my life.	Never	Rarely	Sometimes	Frequently	Almost Always

32.	I have trouble at work/school because of drinking or drug use (If not applicable, mark “Never.”)	Never	Rarely	Sometimes	Frequently	Almost Always
33.	I feel that something bad is going to happen.	Never	Rarely	Sometimes	Frequently	Almost Always
34.	I have sore muscles.	Never	Rarely	Sometimes	Frequently	Almost Always
35.	I feel afraid of open spaces, of driving, or being on buses, subways, etc.	Never	Rarely	Sometimes	Frequently	Almost Always
36.	I feel nervous.	Never	Rarely	Sometimes	Frequently	Almost Always
37.	I feel my love relationships are full and complete.	Never	Rarely	Sometimes	Frequently	Almost Always
38.	I feel that I am not doing well at work/school.	Never	Rarely	Sometimes	Frequently	Almost Always
39.	I have too many disagreements at work/school.	Never	Rarely	Sometimes	Frequently	Almost Always
40.	I feel something is wrong with my mind.	Never	Rarely	Sometimes	Frequently	Almost Always
41.	I have trouble falling asleep or staying asleep.	Never	Rarely	Sometimes	Frequently	Almost Always
42.	I feel “blue.”	Never	Rarely	Sometimes	Frequently	Almost Always
43.	I am satisfied with my relationships with others.	Never	Rarely	Sometimes	Frequently	Almost Always
44.	I feel angry enough at work/school to do something I might regret.	Never	Rarely	Sometimes	Frequently	Almost Always
45.	I have headaches.	Never	Rarely	Sometimes	Frequently	Almost Always

VITA

Shiloh Jordan Varvel was born in Phoenix, Arizona on May 20, 1981. She grew up in Pinetop-Lakeside, Arizona where she graduated from Blue Ridge High School in 1999. She earned her Bachelor's of Arts in Psychology with a minor in Spanish in 2003 from The University of Arizona in Tucson, Arizona. Shiloh completed her Master's of Education in Counseling Psychology in 2005 from the University of Missouri in Columbia, Missouri. She will complete her predoctoral internship at the Southwest VA Health Care System in Tucson, Arizona and her Doctorate of Philosophy in Counseling Psychology from the University of Missouri in August 2009. Shiloh plans to pursue a career in both clinical work and research with veterans and other high-stress occupational groups.