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## Models of First Responder Coping: Police Officers as a Unique Population

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### Abstract

The term “first responders” refers to a range of professional occupations, including police officers, fire fighters, search and rescue personnel, ambulance personnel, and military personnel. Research by the present authors (Arble & Arnetz, 2016) has developed empirical models of first responder coping, identifying two coping pathways with differential outcomes: approach and avoidance coping. The present investigation considers police officers as a unique group and measures the extent to which police officers differ from other first responders in coping behaviors following trauma, based upon a nationally-representative survey of 917 Swedish police officers. Although the model of coping behaviors following trauma and the effects on well-being displayed several similarities between police officers and other first responders, there was compelling evidence to suggest that there are professionally-bound aspects of psychological coping, resilience, and well-being that merit further exploration. Among police officers, for example, avoidant coping was related to worse well-being, and police officers reported greater consequence to well-being related to substance use than other first responders. The unique aspects of police officer coping in comparison to other first responder groups are explored.

### Keywords

First Responder; Police; Coping Strategies; Job Stress; Health Promotion

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First responders are identified as professionals who respond to emergency situations in order to provide safety and protection to citizens, property, and communities. First responder groups that have received notable empirical attention include police or law enforcement officers (e.g. Arble & Arnetz, 2016), fire fighters (e.g. Harvey et al., 2016), search and rescue personnel such as those in National Guard services (e.g. Sahker, Acion, & Arndt, 2016), ambulance personnel (emergency medical technicians and paramedics; e.g. Streb, Haller, & Michale, 2014), and military personnel (Jacobson, Donoho, Crum-Cianflone, & Maguen, 2015). Although these professions are tasked with widely discrepant responsibilities and challenges, all first responder groups are engaged in uniquely demanding and dangerous work (Penalba, McGuire, & Leite, 2009) involving regular exposure to both physical and psychological stressors (e.g. Galloucis, Silverman, & Francek, 2000; McCaslin et al., 2006).

Among first responder groups, police officers have been the subject of numerous research, in part, because of their frequent exposure to many potentially traumatic, critical incidents in their everyday occupational responsibilities (Andersen, Papazoglou, Koskelainen, & Nyman, 2015). Examples of police critical incident exposures include motor vehicle chases and accidents, domestic violence, crowd control, physical assaults, handling dead bodies, and dealing with unpredictable, dangerous, and armed criminals (Arble, Lumley, Pole, Blessman, & Arnetz, 2016; Carlier, Lamberts, & Gersons, 2000; Van Hasselt et al., 2008; Toch, 2002).

The consequences of police officer critical incident exposure are severe. For example, the incidence of duty-related post-traumatic stress disorder (PTSD) among police officers ranges from 7% to 19% (Marmar et al., 2006). Other signs of pathology and behavioral dysfunction have also been noted, including anxiety, poor sleep, somatic symptoms (McMillen et al., 2000), depression (Buchanan, Stephens, & Long, 2001), impaired job performance, and maladaptive health behaviors (Anshel, 2000; Reynolds & Wagner, 2007).

The severity of outcomes among first responders has prompted several empirical investigations into the coping strategies and resources available to them, and of note, some studies of police officers have suggested cause for optimism concerning police officer well-being (Deville & Varker, 2013; van der Velden et al, 2013). One such investigation conducted by the present authors developed a theoretical model of first responder coping that identified several pathways of resilience. The model demonstrated that first responders could engage in numerous coping strategies that ultimately translated to greater overall well-being. Most centrally, the model provided strong evidence for a conceptual bifurcation within successful first responder coping: approach strategies and avoidance strategies with differential implication for long-term health (Arble & Arnetz, 2016).

Approach coping strategies connote a conscious effort to recognize and process aversive physical or psychological experiences and stimuli (Krohne, 1996). Approach coping strategies are based upon a deliberate analysis and processing of unpleasant or threatening information (Krohne, 1996). For example, an individual experiencing anxiety may discuss their fears with a friend. People undergo this potentially grueling process of addressing their issues in a direct fashion in order to increase their knowledge, cultivate resources to deal with stressful thoughts or reactions, and challenging maladaptive patterns of thought or behavior (Affleck & Tennen, 1996; Davis, Nolen-Hoeksema, & Larson, 1998).

There is strong empirical evidence to support the benefits of approach-based processing of difficult or traumatic events, despite the fact that such processing necessarily forces one to address the emotions, memories, and bodily sensations that can be painful to face (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Lack of such approach-based coping may allow harmful assumptions and conclusions to remain unchallenged within an individual, inadvertently granting the emotionally damaging material increasingly more power and influence. Furthermore, lack of examination may preclude the individual from developing more adaptive perceptions (Barlow, 2000) or benefitting from new learning experiences (Hayes et al., 2006).

Conversely, avoidance coping connotes a strategy of avoiding direct consideration of emotionally troubling thoughts or concerns, as well as an avoidance of the stimuli that might trigger such feelings (Anshel, 1996; Roth & Cohen, 1986). For example, an individual experiencing anxiety may watch a movie to distract themselves. Thus, although underlying psychological content is not addressed, avoidance coping allows for the deferment of emotionally painful mood states. Use of avoidance coping strategies among those exposed to significant stressors is complex, though some research has indicated that this strategy may ultimately result in greater pathology (Marx & Sloan, 2005) and decreased awareness of positive environmental stimuli (Litz, Orsillo, Kaloupek, & Weathers, 2000).

Among police officers, a particularly harmful manifestation of avoidance coping is that of substance use as a means to blunt the effect (i.e., avoid) of ongoing, or past, troubling experiences. Estimates suggest that approximately 25% of police officers consume harmful levels of alcohol (Ballenger et al, 2013), which may be related to job stressors and a specific police subculture (Menard & Arter, 2013). Unfortunately, the consumption of alcohol as a coping strategy is associated with alcoholism, obesity, marital conflict, low self-esteem, emotion dysregulation, depression, poor sleep, chronic fatigue, and reduced quality of work performance (Anshel, 2000; Peele, 1991; Roskies, 1991).

These contrasting coping strategies are further complicated by their interplay with various demographic factors. For example, some research has suggested that female police officers may experience higher rates of job-related stress, although other research has not found such differences (Poteyeva & Sun, 2009). Significantly differing rates of alcohol consumption have also been noted when comparing male and female officers (Davey, Obst, & Sheehan, 2000). In regards to trauma, despite the consistently higher rates of PTSD among female civilians (Tolin & Foa, 2006), female police officers do not demonstrate significantly higher levels of the disorder (Brewin, Andrews, & Valentine, 2000). Clearly, additional research is needed as to the possible effects of demographics and other characteristics on police officer health.

Similarly, activities that are not easily categorized as strictly approach- or avoidance-based coping can be quite impactful. For example, research has consistently demonstrated that exercise is associated with improved mood, physical health, and life satisfaction (Farmer, Locke, Moscicki, Larson, & Radloff, 1988; Meyer & Brooks, 2000); critically, one of the maladaptive consequences of stressful or traumatic experiences may be their disruption of these health behaviors (Assis et al., 2008), a finding that has been replicated among populations with elevated trauma exposure (e.g. Koss, Koss, & Woodruff, 1991; Schnurr & Spiro, 1999; Waigandt, Wallace, Phelps, & Miller, 1990).

Furthermore, the result of critical incidents is not always negative. Some first responders demonstrate a sense of revitalization and report a new perspective on life following difficult events, a phenomenon known as post-traumatic growth (Tedeschi & Calhoun, 2004). Individuals experiencing such growth often report spiritual and philosophical changes, enhanced motivation, and a more positive outlook (Kashdan & Kane, 2011). Although some research indicates that post-traumatic growth is primarily a consequence of approach-based coping, other research, including that of the present authors, suggest that avoidance-based

coping may also offer an avenue for such growth (e.g. Fauerbach et al., 2009; Arble & Arnetz, 2016).

In summary, assessing the effectiveness of various coping strategies is complex, and varies based upon the individual, the stressor context (e.g. chronic or acute), and the specific coping strategies employed (Kashdan & Rottenberg, 2010). There is evidence to suggest that a variety of coping strategies can result in positive outcomes, and flexibility in the application of coping strategies may be critical (Park, Chang, & You, 2015). Nonetheless, a sole reliance upon avoidance strategies is likely to result in worse overall mental and physical health (Suls & Flethcer, 1985; Brown & Campbell, 1994; Anshel, 2000; Littleton, Horsley, John, & Nelson, 2007; Joseph, Murphy, & Regel, 2012).

To our knowledge, the Arble and Arnetz (2016) study was the first large scale analysis across multiple first responder groups, providing unique evidence as to potential pathways to successful first responder coping. However, while this analysis provided an important view of first responders as a whole, questions about the population-specific factors remain. For example, first responders in the National Guard may have a largely different culture in regards to the use of alcohol when compared to police officers, and thus may experience cultural pressures to engage in one form of coping as opposed to another. In a similar fashion, firefighters may differ from ambulance drivers in regards to the frequency and severity of their workplace stressors. As such, the present investigation sought to explore in greater detail the model of coping articulated in Arble and Arnetz (2016) among one specific group of first responders: police officers.

Police officers represent a logical group for additional focus due to both theoretical and empirical reasons. Previous research has suggested that empirical models of police officer experiences are significantly distinct from other first responder groups (Brough, 2004). Comparative analyses further suggest that in many respects, the occupational stress experienced by police officers differs from other first responders both qualitatively and quantitatively (Beaton, Murphy, Johnson, Pike, & Corneil; Hart & Cotton, 2003; Pendleton, Stotland, Spiers, & Kirsch, 1989) and support the view that although police, fire, and ambulance workers have similar job characteristics, the consequences of police work do differ from those of other emergency service workers.

This analysis considers police officers as a unique group and measures the extent to which police officers differ from other first responders in coping behaviors following trauma. Additionally, specific factors of relevance to police officers might have been masked when studying first responders as a whole. Specifically, the effects of alcohol and sex-related differences among the experience of police officers will be reviewed. We examine two primary hypotheses comparing police officers to other first responders. First, (H1) police officers will demonstrate a greater reliance on substance use than other first responders and this will worsen the effects of stress on well-being. Second, (H2) male and female police officers will differ in coping strategies in response to stress to account for sex-related differences in well-being.

## Method

Of note, the following methods were originally detailed in the Arble and Arnetz (2016) research. The present analysis is unique in its reporting of effects specific to police officers and the comparisons of age and sex differences within this sub-group. Although the data overlap with the prior publication and the description of recruitment and survey items are identical, the present description is edited to emphasize a focus on responding police officers.

## Participants

Participants were drawn from a larger cross-sectional sample of Swedish first responders in the following occupations: coast guard, customs control, military, emergency medical services, fire department, and police services. The survey was distributed to a nationally-representative sample of 6,240 first responders, of whom 3,656 (59%) responded. Among police, the survey was distributed electronically using highly-secured internal servers, to a representative sample of 1,624 officers, of whom, 917 responded (56% response rate). There were significant differences in gender distribution across the first responder groups (a total of 751 women responded): 26% of police officers were women and 19.5% of other first responders were women. Age was reported as an ordinal variable; approximately 69% of the responding police officers, and 64% of other first responders, were between the ages of 30 and 55 years.

Participants were identified through collaboration with senior management and union representatives from all five first responder agencies. Additionally, the research project worked in conjunction with the Royal Foundation of Sweden (“Kungafonden”). This foundation is, to our knowledge, the world’s only foundation solely dedicated to the health and well-being of first responders. There were several meetings, arranged by Kungafunden, to present and discuss the research project with representatives of both management and unions of first responder organizations, including police. These meetings were critical for finalizing the research plan and the survey instrument and ensure participatory-based research processes were used throughout the entire process, including presenting and discussing the implications of the study’s results.

## Survey Construction

Items in the survey were derived from focus-group interviews with first responders in Sweden. Throughout these focus group meeting, departmental leadership and more junior employees identified common professional difficulties. A comprehensive list of these difficulties was subsequently generated and condensed into a single list of potential survey items. As described in the previous research (Arble & Arnetz, 2016), selection of final items for the survey was guided by three principles: 1. broad applicability (i.e., items that did not apply across first responder groups were removed); impact (topics that were identified by many first responders, or were described as particularly important were retained); and current theory related to first responder health and stress (i.e., items that connected to topics identified in the literature as being relevant were retained). The resulting survey focused upon exposure to stress, well-being, social support, coping styles, substance use, physical

health, and post-traumatic growth. All survey items were written in Swedish and were unique to the present study.

To facilitate cooperation with the various departments, and to limit the burden carried by participation, the survey emphasized brevity, and included responses on interval scales ranging from 1–10 (“Strongly Disagree” to “Strongly Agree”). All scales were between three and five items in length and achieved Cronbach’s alpha values of .75 or higher.

## Analyses

All analyses were conducted in a structural equation modeling framework using MPlus software (v7, Muthen & Muthen). Prior to path analyses, survey items were submitted to confirmatory factor analysis with weighted least squares estimation of interval scale data. Building from our prior publication (Arble and Arnetz, 2016) that reported item factor analyses and the specification of alternative models, we tested the supported hypothesized model in the sub-sample of police officers and compared effects against a group of other first responders (i.e., fire, medical, and National Guard). Briefly, factor composite sums (log transformed to address skew) were submitted to path analysis estimated with full information maximum likelihood. Model fit was evaluated via multiple indices (Raykov and Marcoulides, 2006): chi-square significance testing (non-significant value supports good fit), comparative fit index (CFI > 0.90), root mean square error of approximation (RMSEA < 0.05), standardized root mean residual (SRMR < 0.05), and for nested model comparisons, Akaike information criterion (AIC) and sample-size adjusted Bayesian information criterion (BIC) for which lower values indicate improved model fit. To compare effects between police and the group of other first responders, a two-group modeling approach was used and unstandardized coefficients are reported. Secondary analysis in only the group of police officers included sex and age (categorical) as covariates to test possible individual differences in coping strategies and well-being following stress exposure. A grouped modeling procedure compared the model paths between the sexes within the police officer group.

## Results

Each construct was identified by several self-report ratings on a scale of 1 (low agreement) to 10 (high agreement). As reported in Arble and Arnetz (2016), survey items were thematically organized and constructs were tested by confirmatory factor analysis. In brief, exposure to stress (factor loading = 0.32–0.63, all  $p < 0.001$ ); well being (0.57–0.81, all  $p < 0.001$ ); social support (0.60–0.69, all  $p < 0.001$ ); approach coping (0.55–0.65, all  $p < 0.001$ ); avoidant coping (0.60–0.90, all  $p < 0.001$ ); physical health (0.21–0.62, all  $p < 0.001$ ); substance use (0.57–0.92, all  $p < 0.001$ ); post-traumatic growth (0.67–0.87, all  $p < 0.001$ ). The confirmatory factor analysis had acceptable fit:  $\chi^2(436) = 8982.27$ ,  $p < 0.01$ ; CFI = 0.86; RMSEA = 0.07.

Prior to comparative analysis with police officers, specifically, the degree of similarity between other first responder groups was evaluated. As a test of the similarity of relationships among variables, the path coefficients were estimated and constrained to be equal across first responder groups (excluding police officers). The poor fit of this grouped

model (CFI = 0.89; RMSEA = 0.07; SRMR = 0.129) indicated inhomogeneity and further inspection revealed the sub-group of military was dissimilar than the other, non-military first responders. Repeating the test with military personnel removed, the respondents from the coast guard, customs control, emergency medical services, and fire department were similar in path coefficients (CFI = 0.94; RMSEA = 0.06; SRMR = 0.095). This was further confirmed with comparable fit between the model with paths constrained to be equal between groups (AIC = -1457.55, BIC = -1290.22) and the model with paths freely estimated in each group (AIC = -1441.74, BIS = -1214.64). Finally, variance in exposure to stress (Bartlett's  $\chi^2 = 3.41$ ,  $p = 0.18$ ) and well-being (Bartlett's  $\chi^2 = 3.45$ ,  $p = 0.18$ ) was confirmed to be similar among non-military first responders. Therefore, further analysis excluded the military group and compared police officers to all other, non-military first responders.

### Model Replication and Differences in Coping Strategies Among Police Officers

Greater stress exposure was associated with lower well-being among police officers ( $r = -0.23$ ,  $p < 0.001$ ; Table 1) and other, non-military first responders ( $r = -0.15$ ,  $p = 0.001$ ). Police officers ( $M = 15.46$ ,  $SD = 3.32$ ) reported greater exposure to stress than other, non-military first responders ( $M = 13.26$ ,  $SD = 3.03$ ;  $t = 15.00$ ,  $p < 0.001$ ) but similar levels of well-being (Table 2). The model of coping behaviors following trauma and the effects on well-being was similar between police officers and other first responders, with a few differences (see Table 3). Police reported lower frequency of approach coping than other first responders (difference =  $-0.20$ ,  $p < 0.001$ ). Among police officers, engaging in approach coping strategies ( $b = 0.13$ ,  $p = 0.004$ ) and physical health activity ( $b = 0.10$ ,  $p < 0.001$ ) each bolstered well-being as compared to the direct effects of avoidant coping ( $b = -0.14$ ,  $p < 0.001$ ) and substance use ( $b = -0.33$ ,  $p < 0.001$ ).

### H1: Police officers will demonstrate a greater reliance on substance use than other first responders and this will worsen the effects of stress on well-being

The relationship of stress exposure, substance use and avoidant coping behavior was similar between police and other first responders (Table 3), but the consequence of substance use to well-being was greater for police officers. Among police, avoidant coping strategies were associated with greater substance use ( $b = 0.24$ ,  $p < 0.001$ ) and indirectly promoted worse well-being (indirect effect =  $-0.03$ ,  $p < 0.001$ ); see Figure 1 for path model. The negative association between substance use and well-being was greater among police ( $b = -0.33$ ,  $p < 0.001$ ) than in other, non-military first responders (difference =  $-0.13$ ,  $p = 0.03$ ), and accounted for 38% of the effects of stress on well-being among police officers (cumulative indirect effect =  $-0.10$ ,  $p < 0.001$ ).

In contrast to the large effects of avoidant-related substance use, indirect paths of stress effects on well-being via approach coping strategies (all indirect effects =  $-0.01$  to  $0.001$ , all  $p > 0.26$ ) and post-traumatic growth ( $b = 0.02$ ,  $p = 0.07$ ) failed to reach significance in the group of police officers. When considered solely as correlates, greater post-traumatic growth was positively correlated with greater well-being among police officers (Table 2), but in the context of the larger model that included the effects of the several coping strategies, the positive association between post-traumatic growth and well-being was diminished.

Nonetheless, approach coping ( $b = 0.14, p < 0.002$ ) and social support ( $b = 0.19, p < 0.001$ ) were each associated with higher reports of post-traumatic growth, and police officers showed greater benefit from social support than other, non-military first responders (Table 3). The model estimated in the sub-sample of police maintained excellent fit:  $\chi^2(6) = 12.45, p = 0.05; CFI = 0.99; RMSEA = 0.03; SRMR = 0.03$ .

### Sex- and Age-Related Differences in Coping Strategies Among Police Officers

We examined sex and age as possible sources of individual differences specifically among police officers. When testing these covariate effects, the non-significant paths in the original model were constrained (i.e., not estimated). The final model of covariate effects had excellent fit:  $\chi^2(18) = 28.98, p = 0.05; CFI = 0.99; RMSEA = 0.03; SRMR = 0.03$ . Older police officers reported lower stress exposure ( $b = -0.06, p < 0.001$ ) and greater post-traumatic growth ( $b = 0.06, p < 0.001$ ), but age was unrelated to differences in well-being ( $b = 0.002, p = 0.80$ ). Older age was associated with lower frequency of approach coping ( $b = -0.02, p = 0.02$ ), social support ( $b = -0.05, p < 0.001$ ) and physical health behaviors ( $b = -0.04, p < 0.002$ ), and greater avoidant coping ( $b = 0.02, p = 0.03$ ), but not substance use ( $b = 0.01, p = 0.31$ ).

### H2: Male and female officers will differ in coping strategies in response to stress to account for sex-related differences in well-being

Female officers reported lower stress exposure ( $b = -0.05, p = 0.01$ ) but worse well-being ( $b = -0.04, p = 0.02$ ) than male counterparts. Additional analysis treating sex as a moderator of the model paths had acceptable fit:  $\chi^2(14) = 26.92, p = 0.02$  (Male = 17.96; Female = 8.96);  $CFI = 0.98; RMSEA = 0.045; SRMR = 0.03$ . This analysis revealed a different pattern of coping behaviors following stress within males and females (Table 4), but only two path magnitudes significantly differentiated the two groups. After exposure to stress, female officers were less likely to engage in avoidant coping strategies ( $b = 0.23, p = 0.01$ ) than their male counterparts ( $b = 0.45, p < 0.001$ ; difference =  $-0.22, p = 0.02$ ). Avoidant coping strategies and related substance use accounted for 69% of the effect of stress on well-being in male officers (cumulative indirect effect =  $-0.13, p < 0.001$ ) and 55% of the effect in female officers (cumulative indirect effect =  $-0.11, p = 0.01$ ). Women also demonstrated a greater benefit to well-being from engaging in physical health activities ( $b = 0.20, p < 0.001$ ) as compared to men ( $b = 0.07, p = 0.02$ ; difference =  $0.13, p = 0.02$ ). Male officers were on average older than female officers ( $b = -0.47, p < 0.001$ ) and among men, older age was associated with lower reported stress ( $b = -0.07, p = 0.001$ ) as compared to among women ( $b = -0.02, p = 0.32$ ; difference =  $0.05, p = 0.04$ ).

## Discussion

The present paper presents an important elaboration of the research conducted by Arble and Arnetz (2016). The present analysis focusing specifically on police officers as compared to other, non-military first responders offers several important considerations. Perhaps the most important of which is the strong evidence that although first responder groups share several commonalities, there appear to be professionally-bound aspects of psychological coping, resilience, and well-being that merit further exploration.



As expected, approach-based coping proved to be the most effective strategy for achieving positive outcomes. Police officers engaging in approach-based coping enjoyed more post-traumatic growth and greater well-being. The effectiveness of approach-based coping strategies has substantial support in the literature (e.g. Affleck & Tennen, 1996; Davis, Nolen-Hoeksema, & Larson, 1998), suggesting that it is beneficial for individuals to process and address their thoughts, emotions, and desires in order to achieve a sense of mastery and adaptability.

Similarly, engaging in physical exercise was related to significantly greater well-being. The use of physical exercise may be associated with either approach- or avoidance-based coping; exercise can be used as a chance for contemplation and purposefully relieving tension, or as a way of avoiding deliberate consideration of painful experiences. Regardless, an increase in health-positive behaviors is likely to produce positive psychological outcomes (Portugal et al., 2013). The other outcome variable that is not easily classified as approach or avoidance, social support, was also found to relate in positive outcomes. Specifically, use of social support was found to significantly relate to greater post-traumatic growth, though it did not significantly relate to well-being. The role of social support in post-traumatic growth has provided inconsistent results (Scrignaro, Barni, & Magrin, 2011), though its relationship to general positive outcomes is more clearly established (Bonanno, Galea, Bucciarelli, & Vlahov, 2007; Shnaider, Sijercic, Wanklyn, Suvak, & Monson, 2017).

In one of the larger departures from the prior publication (Arble & Arnetz, 2016), when accounting for coping strategies, post-traumatic growth did not demonstrate a statistically significant relationship with well-being among police officers. Post-traumatic growth and well-being were positively correlated, as expected, but once each of these were commonly regressed onto various coping strategies and behaviors, this positive association was diminished below statistical significance. Methodological considerations must be made when interpreting this effect. In the path model, variance is partitioned and the unique covariance between post-traumatic growth and well-being was below the threshold for significance. Related to this, the sample of police officers, although sizable, may be insufficient to power tests of this effect. Indeed, the same path was statistically significant in the group of other first responders. Several other model paths showed a pattern of being statistically similar to the larger sample of other, non-military first responders, but failed to reach significance among police officers alone. Taken together, the relatively smaller sample size of police officers is a considerable limitation of the reported analyses.

However, this may also suggest that among police officers specifically, there is a distinction to be made between the more cognitive, or existential, outcome of post-traumatic growth and the more physiologically-anchored version of well-being in the present analysis. One potential explanation of this distinction may be found in the work of Joseph and Linley (2005), who propose that post-traumatic growth is better conceptualized as an increase in psychological well-being as opposed to an increase in subjective well-being. In short, subjective well-being is more concerned with affective and physiological responses, while psychological well-being is more oriented towards dispositional and existential factors; a distinction that enjoys some empirical support (Joseph et al., 2012). While both outcomes are important, police officers may face unique challenges in linking the two. If this is indeed

the case, the reported evidence suggests that older age, and presumably job experience, may modify this relationship. Older age was associated with greater post-traumatic growth, although age was unrelated to individual differences in well-being. This is consistent with older adults engaging in greater spiritual and existential thinking, despite general declines in physical health and physicality (Novak, 1985; Neugartsen, 1977). In other words, older officers may be better equipped to evaluate psychological well-being apart from subjective indicators of health.

The largest difference in comparing police officers to other, non-military first responders was the role of avoidant coping. As previously discussed, the role of avoidant coping has proved difficult to summarize. While some research has documented its potential for ill-effects, other investigations have offered a more positive view. Among police officers, avoidant coping was related to worse well-being, and this alone had a similar consequence as compared to other first responders. However, substance use following from avoidant coping produced worse well-being among police officers as compared to other, non-military first responders. The path from avoidant coping to post-traumatic growth failed to achieve significance, while a clear path from avoidant coping to substance use emerged. The cumulative effect was greater consequence to well-being and lesser post-traumatic growth following from avoidant coping strategies among police officers.

There are numerous potential interpretations for this result, but two comments seem particularly relevant. First, avoidant coping appears most effective when utilized in conjunction with more approach-based strategies. The complementary use of strategies may prove particularly difficult for police officers, who may instead default to an avoidance-heavy strategy. Indeed, the basic elements of approach-based coping (e.g. emotion labeling) may prove more difficult for police officers than other first responders (Gasch, 2006), ultimately leading to an overuse of avoidant coping. This notion is particularly supported by the consistent relationship between avoidant coping and substance use, with substance use serving as perhaps the most detrimental form of avoidant coping (e.g. drinking to numb emotions). The role of alcohol within police culture, both recreationally and as a form of coping, has been commented on extensively (Ballenger et al., 2011).

Second, the potential consequences of excessive alcohol use are severe. Not only can such substances hamper effective coping, but they can further lead to deterioration in psychological functioning and physical health. While these outcomes are alarming for any individual, the dangerous work of police officers makes such deficiencies even more concerning, as their lives, the lives of their coworkers, and the lives of the civilians they interact with may all be placed at risk. Disruption of this path thus appears critical, and the need for interventions to address this potential coping trap for police officers appears warranted.

Intriguingly, male and female officers differed in their reliance on avoidant coping strategies and this should be taken into consideration when designing interventions to promote well-being. The cumulative effect of avoidant coping and substance use accounted for 69% of the ill effects of stress on well-being among male officers, and only 55% among female counterparts. Although this remained a substantial effect, women relied less on avoidant

coping strategies following stress. Within this sample, we did not find a trade-off for women to engage in other coping strategies more frequently. However, women showed a greater benefit to well-being from physical health activities and this may be a promising avenue to further diminish the reliance on substance use as a coping strategy. It is worth noting differences in age between the sexes. Male officers were on average older, and older officers reported lower stress exposure, approach coping, social support and physical health activities; this accounted for some, but not all, of the sex differences in the modeled relationships. For example, women reported lower exposure to stress but worse well-being than men. This highlights a careful distinction that arose in the model—approach coping, social support and physical health were positively related to post-traumatic growth or well-being as was expected, but these coping strategies did not offset the ill effects of avoidant coping and substance use on well-being among police officers. Because the positive effects of these behaviors are evident among police officers, interventions aimed to increase these specifically in response to stressful events are expected to confer benefits to well-being and may offset the reliance upon avoidant-related substance use.

### Limitations

There are several limitations to the present investigation. First, because the data is cross-sectional, there is a necessary caution that the provided model cannot assert causal relationships. Rather, the model suggests avenues for future longitudinal studies to investigate and confirm. In particular, interventions that alter the use of coping strategies would offer a more direct means to evaluate the causal relationships between stress-related coping strategies, post-traumatic growth and well-being.

Second, the use of factor composite sums allowed extension of our prior work, but this may have reduced the sensitivity of measures of post-traumatic growth and well-being. As discussed, psychological and subjective well-being may be two prongs of a common construct, and this dimensionality could not be tested in the reported model construction. Future studies may consider constructing survey items that are more sensitive to this distinction in order to better understand the relationship between post-traumatic growth and well-being.

Third, although many effects were statistically significant, the effect sizes were relatively small. The sample was sizable but the tests of effects in the relatively smaller group of police officers may have been underpowered. A similar consideration must be made for the comparisons between male and female police officers; the notably smaller group of female police officers reflects the disproportion of women in the profession. The modeling technique is relatively robust for comparisons made with different group sizes, nonetheless tests of effects within the group of women may have been underpowered. For this reason, in all analyses we emphasize group differences in effect magnitudes, and not in the pattern of statistical significance. Moreover, the model is an incomplete account of well-being and the response to stress. Alternative models were tested in the original report in the context of first responders in general (Arble and Arnetz, 2016), and this model configuration had good fit in the police officer sub-group. Nonetheless, alternative path models, as well as additional covariates, may further account for professional-bound aspects of well-being following

trauma. Thus, it is unclear the extent to which these effects translate to meaningful and salient individual experience.

Fourth, the use of brief focus-group generated items ensured item relevancy and survey brevity. However, the scales created for this study, though internally consistent and seemingly enjoying face validity, may not capture elements of the constructs that more well-validated and standardized measures might be capable of.

Finally, there are necessary limitations that accompany a purely self-report investigation. Defensiveness, inaccuracy in self-evaluation, and mono-method variance are all factors that may exert undue influence in a self-report model. In addition to longitudinal experimental designs and more thorough assessment batteries, biological and performance-based measures could provide an important supplement to the existing research.

## Conclusion

We report on specific differences in stress-related coping behaviors between police officers and other, non-military first responders. Although first responder groups share several commonalities, there appear to be professionally-bound aspects of psychological coping, resilience, and well-being that merit further exploration. Most apparent was the greater consequence of substance use on well-being among police officers as compared to other, non-military first responders. The benefits of approach coping, social support and physical health behaviors to well-being and post-traumatic growth were evident among police officers, but did not offset the ill effects of avoidant coping and substance use. Male and female officers differed in their reliance on avoidant coping, but the diminished well-being common to all officers identified putative pathways for intervention. Training and education to disrupt substance use as an avoidant coping strategy and to redirect towards health behaviors may be an effective means to improve psychological outcomes among police officers.

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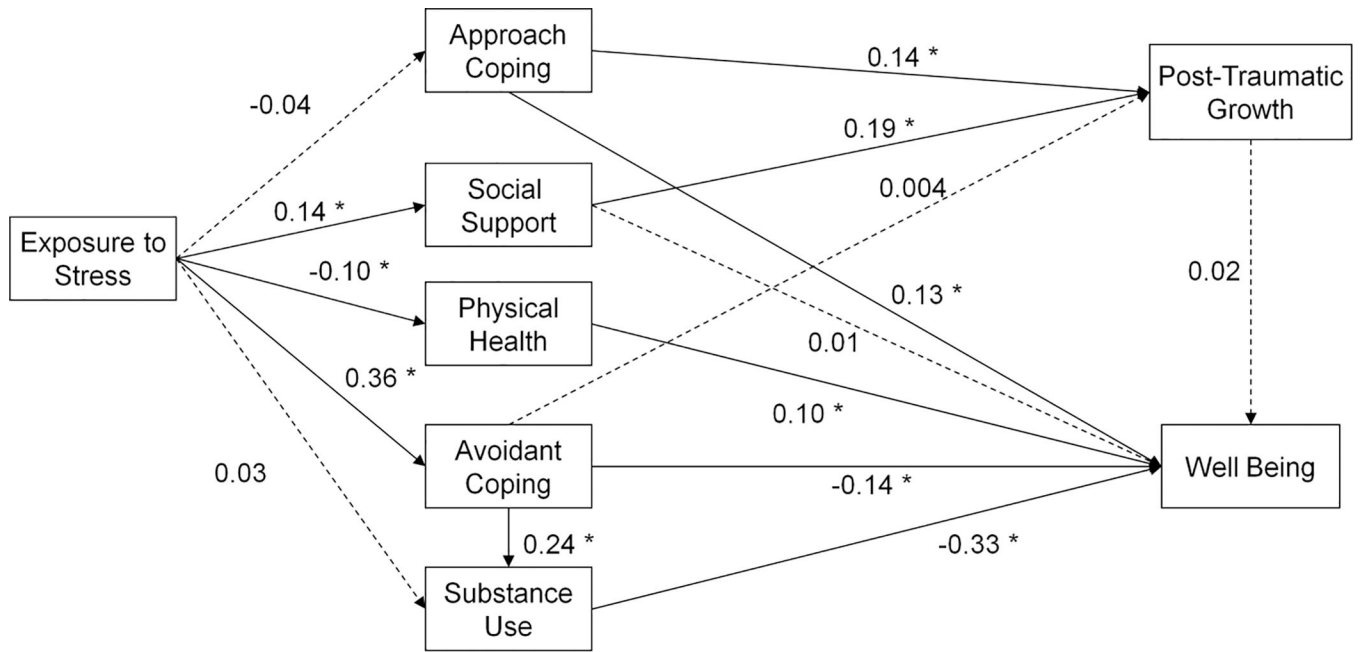
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**Figure 1.** A diagram of the path analysis estimated in the police officers group. Unstandardized coefficients are reported (\*  $p < 0.05$ ) and non-significant paths are indicated by dashed lines.

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**Table 1.**

Bivariate correlations among variables in the police officer group.

		1	2	3	4	5	6	7
1	Exposure to Stress	1.00						
2	Well-Being	<b>-0.23</b>	1.00					
3	Post-Traumatic Growth	0.02	0.07	1.00				
4	Approach Coping	<b>-0.11</b>	<b>0.17</b>	<b>0.18</b>	1.00			
5	Social Support	<b>0.13</b>	0.07	<b>0.19</b>	<b>0.27</b>	1.00		
6	Physical Health	<b>-0.16</b>	<b>0.27</b>	0.04	<b>0.25</b>	0.02	1.00	
7	Avoidant Coping	<b>0.35</b>	<b>-0.34</b>	-0.05	<b>-0.11</b>	-0.08	<b>-0.23</b>	1.00
8	Substance Use	<b>0.15</b>	<b>-0.32</b>	<b>0.16</b>	<b>-0.14</b>	-0.02	<b>-0.21</b>	<b>0.38</b>

Note: Significant correlations are bolded ( $p < 0.05$ ). Higher values indicate greater incidence of the reported experiences or behaviors.

**Table 2.**

Comparisons between police officers and other, non-military first responders in mean exposure to stress, well-being, post-traumatic growth and coping behaviors.

Variable	Police		Other First Responders		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Exposure to Stress	15.46	3.32	13.26	3.03	<b>15.00</b>
Well-Being	36.28	7.78	36.00	7.46	0.84
Post-Traumatic Growth	12.76	2.31	12.66	2.52	0.81
Approach Coping	8.33	1.65	8.27	1.81	0.78
Social Support	10.76	2.27	10.29	2.40	<b>4.30</b>
Physical Health	12.59	3.41	13.10	3.38	<b>-3.47</b>
Avoidant Coping	6.50	2.09	6.15	1.93	<b>3.77</b>
Substance Use	3.46	1.03	3.62	1.25	<b>-2.88</b>

*Note:* Group means and standard deviations are reported for police officers and other, non-military first responders; significant group differences are bolded ( $p < 0.05$ ). Higher values indicate greater incidence of the reported experiences or behaviors.

**Table 3.**

Summary of path analysis compared between police officers and other, non-military first responders.

Path	Police (b)	Other First Responders (b)	Difference	p-value
Stress → Approach	-0.04	<b>0.16</b>	<i>-0.20</i>	<i>&lt;0.001</i>
Stress → Social Support	<b>0.14</b>	<b>0.18</b>	-0.04	0.340
Stress → Physical Health	<b>-0.10</b>	<b>-0.15</b>	0.04	0.465
Stress → Avoidant	<b>0.36</b>	<b>0.32</b>	0.04	0.471
Stress → Substance Use	0.03	<b>0.08</b>	-0.05	0.174
Avoidant → Substance Use	<b>0.24</b>	<b>0.42</b>	<i>-0.18</i>	<i>&lt;0.001</i>
Approach → Post-traumatic Growth	<b>0.14</b>	<b>0.25</b>	-0.11	0.074
Social Support → Post-traumatic Growth	<b>0.19</b>	0.02	<i>0.17</i>	<i>0.003</i>
Avoidant → Post-traumatic Growth	0.00	<b>-0.10</b>	<i>0.10</i>	<i>0.014</i>
Post-traumatic Growth → Well-being	0.02	<b>0.13</b>	<i>-0.11</i>	<i>0.034</i>
Approach → Well-being	<b>0.13</b>	<b>0.08</b>	0.05	0.362
Social Support → Well-being	0.01	-0.03	0.04	0.475
Physical Health → Well-being	<b>0.10</b>	<b>0.13</b>	-0.02	0.497
Avoidant → Well-being	<b>-0.14</b>	<b>-0.12</b>	-0.01	0.762
Substance Use → Well-being	<b>-0.33</b>	<b>-0.21</b>	<i>-0.13</i>	<i>0.034</i>

Note: Unstandardized coefficients are reported as estimated in the grouped path analysis. Significant paths in each group model are bolded ( $p < 0.05$ ) and differences between police officers and other, non-military first responders are italicized for emphasis.

**Table 4.**

Sex differences in relation between stress, coping strategies and well-being among police officers.

Path	Female	Male	Difference	p-value
Stress → Approach	<b>-0.16</b>	-0.04	-0.12	0.09
Stress → Social Support	0.07	<b>0.12</b>	-0.05	0.48
Stress → Physical Health	-0.14	<b>-0.16</b>	0.02	0.84
Stress → Avoidant	<b>0.23</b>	<b>0.45</b>	<i>-0.22</i>	<i>0.02</i>
Stress → Substance Use	0.00	0.07	-0.07	0.29
Avoidant → Substance Use	<b>0.27</b>	<b>0.21</b>	0.06	0.24
Approach → Post-traumatic Growth	0.10	<b>0.15</b>	-0.05	0.66
Social Support → Post-traumatic Growth	0.17	<b>0.28</b>	-0.11	0.27
Avoidant → Post-traumatic Growth	-0.05	0.02	-0.07	0.31
Post-traumatic Growth → Well-being	0.09	0.01	0.09	0.37
Approach → Well-being	0.17	0.09	0.07	0.47
Social Support → Well-being	-0.01	0.02	-0.03	0.77
Physical Health → Well-being	<b>0.20</b>	<b>0.07</b>	<i>0.13</i>	<i>0.02</i>
Avoidant → Well-being	<b>-0.21</b>	<b>-0.12</b>	-0.09	0.22
Substance Use → Well-being	-0.16	<b>-0.38</b>	0.22	0.06

*Note:* Unstandardized regression coefficients estimated in the grouped path model are reported, significant paths within each sex group are bolded ( $p < 0.02$ ), significant sex differences are italicized for emphasis. All effects were estimated simultaneous to tests of between-sex differences.