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Social support, Self-efficacy, Trauma and Well-being in Emergency Medical Dispatchers

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RUNNING HEAD: Emergency Medical Dispatchers

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Abstract

Emergency Medical Dispatchers (EMDs) respond to crisis calls for ambulance; they dispatch paramedics and provide emotional and medical assistance to callers. Despite the stressful nature and exposure to potentially traumatising events in this role, there has been no published research specifically investigating well-being or posttraumatic growth among EMDs. Extrapolating from research conducted among other emergency services workers (e.g., paramedics, police), literature attests to the importance of self efficacy and social support in promoting mental health in emergency service workers. Therefore, this study assessed the impact of self efficacy, and giving and receiving social support on psychological well-being, posttraumatic growth (PTG), and symptoms of posttraumatic stress disorder (PTSD). Sixty EMDs (50% response rate) completed an online questionnaire. Three hierarchical multiple regression analyses were conducted to ascertain predictors of well-being, PTG and PTSD. Receiving social support emerged as a significant positive predictor of well-being and PTG, and a significant negative predictor of PTSD. Self efficacy was found to significantly and positively predict well-being, and shift-work was found to significantly and negatively predict PTSD. These results highlight that self efficacy and receiving social support are likely to be important for enhancing well-being within this population, and that receiving social support is also likely to facilitate positive post-trauma responses. Such findings have implications for the way emergency service personnel are educated with reference to aspects of mental health and how best to support personnel in order to achieve optimal mental health outcomes for all.

Keywords: emergency medical; posttraumatic growth, well-being. Posttraumatic stress, social support, self efficacy

Social support, Self-efficacy, Trauma, and Well-being in Emergency Medical Dispatchers

An emergency medical dispatcher (EMD) is responsible for taking emergency calls for the ambulance service, dispatching paramedics, and assisting callers until paramedics arrive (Spence, 2012). Although EMDs are routinely exposed to organisational and operational stressors (Brough, 2005), and potentially traumatising events (Kirby, Shakespeare-Finch, & Palk, 2011), there has been a paucity of research assessing the well-being of this population. Research examining emergency service worker well-being has tended to focus on those who occupy roles such as paramedics, police and fire-fighters. Such research has investigated the effects of a range of variables from personality factors (Shakespeare-Finch, Gow, & Smith, 2005), through to the impact of organisational and operational stressors (Brough, 2005), and the impact of potentially traumatic events (PTEs) (e. g., Burke & Shakespeare-Finch, 2011). Yet it is EMD's that are the vital first link that members of the community have with emergency medical responders.

Emergency Medical Dispatchers

There is an important difference between EMDs and call-takers. The role of call-taking involves answering the emergency call, asking which service is required, and directing it to an EMD if the caller requires an ambulance. While phone contact eliminates direct physical danger, EMDs are faced with unique telecommunication stressors, including the need to judge situations based on ambiguous information, to provide medical advice and psychological support while awaiting the arrival of paramedics, and to handle difficulties in communication (Dunford, 2002). Limited available literature attests to the stressful nature of the EMD role. For example, in a Swedish study it was reported that the EMD role was stressful as decisions needed to be made urgently, and assessing situations over the phone was difficult (Forslund, Kihlgren, & Kihlgren, 2004). Adding to the stress reported in this study was the unpredictable nature of incidents, communication difficulties, and situations

where poor information was conveyed (Forslund et al., 2004). Incidents involving children were particularly taxing, and the emotions of adults in such situations were psychologically challenging, as were situations where the employee identified with the caller or patient (Forslund et al., 2004). The EMDs indicated a need for more education and counselling, including a desire for psychological education in order to support callers until paramedics arrived (Forslund et al., 2004).

A preliminary study of EMDs by Weibel, Gabrion, Aussedat, and Kreutz (2003) investigated biological indicators of stress by assessing the cortisol levels of EMDs on shift compared to a matched control group during a leisure period. The EMDs on shift elicited significantly higher cortisol levels than the leisure group, which was commensurate with the perceived stress they reported (Weibel et al., 2003). Although this study investigated stress, it did not explore factors that may impact on the presence of well-being. Research with emergency service workers has typically examined the absence of pathology rather than the presence of well-being (e.g., Rodwell, Noblet, & Allisey, 2011), which is based on a pathogenic framework conceptualising well-being as the avoidance of negative responses to stress or trauma (Antonovsky, 1996). However, employees in high risk occupations have been found to experience positive responses to adversity more commonly than symptoms of pathology (Shakespeare-Finch, Smith, Gow, Embelton, & Baird, 2003).

Psychological Well-being

Assessing the presence of psychological well-being can be based in conceptualisations of psychological well-being (also known as eudaimonic well-being), or subjective well-being, a concept of hedonic psychology (Ryff, Singer, & Love, 2004). Psychological well-being emphasises reaching one's potential and attaining life goals, and is considered to be a process rather than an outcome, where individuals are constantly developing and growing (Ryff et al., 2004). In contrast, subjective well-being refers to

happiness, the absence of negative affect, and notions of life satisfaction (Deci & Ryan, 2008). Subjective well-being alone is not considered to be a comprehensive measure of true well-being, as it offers no indication as to whether individuals are leading a life of purpose and reaching their potential (Ryff & Keyes, 1995). As psychological well-being is a more thorough measure of well-being in this sense (Ryff & Keyes, 1995), it is this construct that will be assessed in the current study.

Negative Post-trauma Outcomes

Negative outcomes may be experienced by some individuals following trauma exposure, which may include posttraumatic stress disorder (PTSD; Figley, 1995), depression or anxiety (Grant, Beck, Marques, Palyo, & Clapp, 2008). PTSD is characterised by extreme stress following trauma exposure, and includes symptoms associated with intrusion, avoidance and hyperarousal.. As PTSD has been reported among emergency service personnel (e.g., Heinrichs et al., 2005), and may co-exist with reports of positive post-trauma changes (Calhoun & Tedeschi, 2006), it is important to examine the presence of PTSD symptoms in the current study in addition to the presence of well-being.

Unlike primary trauma where the victim directly experiences the event, victims of secondary and vicarious trauma indirectly experience the event through witnessing or listening to the primary victim's experience (Figley, 1995). However, secondary trauma and vicarious trauma can produce PTSD symptoms that are markedly similar to those elicited by primary trauma (Figley, 1995). Although EMDs are not directly exposed to physical danger, this population are confronted with PTEs through assisting civilians in highly stressful situations, and exposure to the traumatic events experienced by others is inherent in the role (Miller, 1995). These PTEs are experienced vicariously rather than directly (Miller, 1995), thus the current study will assess PTSD in relation to vicarious trauma.

Positive Post-trauma Outcomes

Research focusing on the development of pathology assumes that exposure to stress will likely result in a reduced level of psychological health (Burke & Shakespeare-Finch, 2011). However, some individuals may experience positive outcomes and trajectories, which may include resilience (Bonanno, 2005), compassion satisfaction (Stamm, 2002), and posttraumatic growth (PTG; Calhoun & Tedeschi, 2006). PTG arises from the struggle to understand and integrate a traumatic event into an individual's existing schemata (Calhoun & Tedeschi, 2006). The development of PTG involves cognitive processing, where individuals ruminate about the traumatic experience and attempt to make meaning of the event (Calhoun & Tedeschi, 2006). It is posited that through making sense of a traumatic experience and narrating it into one's life, the individual may perceive the trauma as providing greater self awareness and the opportunity to live life in a manner that is true to oneself (Joseph & Linley, 2005). PTG does not negate the experience of distress; rather, growth and distress appear to be independent, and distress can occur alongside growth (Calhoun & Tedeschi, 2006). This independence is reflected in the salutogenic paradigm, which recognises that individuals with high levels of well-being or growth may also be distressed (Antonovsky, 1996). It is important to investigate these potential responses in order to understand the full array of post-trauma reactions that may occur. Therefore, both PTG and PTSD will be assessed in this study.

Shift-work

Due to the limited research with EMDs, variables that may be important in this population must be extrapolated from literature pertaining to related populations. In addition to PTEs, shift-work is a work context variable that has been identified as a potential influence on well-being and post-trauma outcomes. Many EMDs are required to do shift-work, which has been found to impact detrimentally on well-being among paramedics, and to reduce the

quality and amount of sleep attained (Sofianopoulos, Williams, & Archer, 2012). Shift-work may also introduce problems in maintaining a balance between work and family commitments, which has been found to impact on well-being (Camerino et al., 2010). Additionally, shift-work may hinder the ability to maintain a social support network, due to having decreased time available to socialise (Costa, 1996). The impact of social support will be discussed later in this review.

Trained Peer Support Officers

Being in the role of a peer support officer is an additional work context variable that may theoretically impact on well-being. For example, Shakespeare-Finch and Scully (2004) found that peer support officers reported higher job satisfaction than their colleagues. The extensive education and training peer supporters undergo in this service may be expected to enhance the well-being of peer support officers, as it increases their coping repertoire and their ability to deal with stressful events (James & Wright, 1991). **Self Efficacy**

Self efficacy encompasses broad beliefs about one's capacity to successfully handle situations and accomplish tasks (Bandura, 1997). Bandura's social cognitive theory proposes that reactions to stress depend on levels of self efficacy. The theory posits that individuals with higher self efficacy experience less disruption when faced with stressors, due to their belief that they have the resources to cope with adversity (Bandura, 1997). Cicognani et al. (2009) and Prati, Pietrantonio, and Cicognani (2010) found that high self efficacy contributed to compassion satisfaction among emergency service workers. Self efficacy has also been implicated in post-trauma responses. In a study of hurricane survivors, self efficacy was negatively correlated with PTSD symptomatology, indicating that lower self efficacy was associated with higher PTSD (Hirschel & Schulenberg, 2009). **Social Support**

Social support is another factor that has been found to influence well-being and post-trauma responses. According to the social buffering hypothesis (Cohen & Wills, 1985), social

support buffers against the adverse impacts of stress, thus contributing to well-being. The theory proposes that social support may prevent individuals from perceiving a situation as stressful, or may help individuals to re-appraise the event by offering alternative views or providing solutions (Cohen & Wills, 1985). The social buffering hypothesis was supported in a study by Stephens and Long (2000), where the results indicated that social support from work colleagues buffered against the effects of stress among police officers. Social support is believed to facilitate PTG through providing an avenue to discuss the traumatic experience, which assists the individual to make meaning of the trauma, and to re-construct life stories in a manner that incorporates the traumatic event (Calhoun & Tedeschi, 2006). Lower levels of social support has also been associated with high reports of PTSD symptomatology with regards to both police officers (Stephens, Long, & Miller, 1997) and fire-fighters (Regehr et al., 2003).. Current emergency services literature has focused on the impacts of receiving social support, yet it has been found that social support comprises facets of both giving and receiving support (Shakespeare-Finch & Obst, 2011). Thus, both giving and receiving social support will be assessed in the current study.

The Current Study

Despite the importance of their profession and the exposure to organisational and operational stressors, EMDs have received minimal research attention with no known research assessing well-being. As the current study is situated in salutogenic theory (i. e., origins of health; Antonovsky, 1996), the primary outcome variable of interest is well-being. However, as a significant proportion of this population are likely to report the experience of trauma, it is also important to investigate both PTG and PTSD symptoms, to reflect the potential for both positive and negative outcomes of trauma. As literature suggests that shift-work can be detrimental to well-being (e.g., Sofianopoulos et al., 2012), it is hypothesised that shift-work will negatively predict psychological well-being and PTG, and positively

predict PTSD. Being a trained peer support officer may theoretically enhance well-being, due to receiving education around adaptive coping mechanisms and responses to stress and trauma (James & Wright, 1991); thus it is hypothesised that being a trained peer support officer will positively predict psychological well-being and PTG, and negatively predict PTSD.

Ascertaining the influence of self efficacy and social support is useful as, unlike work context variables, these factors are amenable to change, and can be adapted to maximise benefits for well-being (LeBlanc et al., 2011). Due to consistent support in the literature for the benefits of self efficacy and receiving support on well-being and post-trauma outcomes (e.g., Regehr et al., 2003), and due to literature attesting to the benefits of giving support (Brown et al., 2003), it is hypothesised that self efficacy and both giving and receiving social support will positively predict psychological well-being and PTG, and negatively predict PTSD. Overall, the research aim for the current study is to determine predictors of psychological well-being and post-trauma responses in EMDs.

Methodology

Participants

Participants were 60 EMDs from a state-wide ambulance service working in the three different regions across Queensland, Australia (a 50% response rate). Employment as an EMD was the only inclusion criteria. Nineteen responders were male and 41 were female. Most participants were married ($n = 41$), 10 were single, 5 divorced, 3 separated and 1 was widowed. Age was measured in categories; 20 participants were over 45, 12 were 41-45, 7 were 36-40, 8 were 31-35, 7 were 26-30 and 6 were 22-25 years old.

Materials

Participants completed a 15 minute online questionnaire that included demographic questions pertaining to gender, age, relationship status, and whether a traumatic event had

been experienced in the course of executing their work role. Questions also asked about location, if they worked on a shift rotation, and whether they were a trained peer support officer. If participants identified they had experienced a traumatic event they were requested to provide a brief description regarding the nature of the event, the time elapsed, and a rating of the perceived severity on a 5-point scale ranging from *mild* to *very severe*. Only the respondents who had experienced trauma were asked to complete questionnaires relating to post-trauma experiences. The primary variables of interest were assessed with the following questionnaires. The reliabilities for all scales in the current study are provided in Table 1 and Table 2.

Self efficacy.

General self efficacy was measured with the New General Self Efficacy scale (NGSE; Chen, Gully, & Eden, 2001). This 8-item scale asks participants to rate their confidence in their ability to perform successfully across a range of situations. Participants respond on a 5-point scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). High scores relate to high perceived self efficacy. Chen et al. (2001) have provided evidence for the uni-dimensional nature, content validity, and reliability of this scale (e. g., $\alpha = .90$).

Social support.

Social support was measured with the 20-item 2-Way Social Support Scale (2-Way SSS; Shakespeare-Finch & Obst, 2011). The 2-Way SSS assesses four factors of giving and receiving emotional and instrumental support. The items are rated on a 6-point scale ranging from 0 (*not at all*) to 5 (*always*). High subscale and total scale scores pertain to high levels of perceived social support. The four factors have been supported by factor analysis, and have remained consistent across populations and the scale also has good convergent and predictive validity (Shakespeare-Finch & Obst, 2011).

Psychological well-being.

The 42-item Psychological Well-being Scale (PWBS; Ryff & Keyes, 1995) measures 6 factors of eudaimonic psychological well-being: Autonomy, personal growth, Purpose in life, Environmental mastery, Positive relations with others, and Self acceptance (Ryff & Keyes, 1995). Participants respond on a 6-point scale, ranging from 1 (*disagree strongly*) to 6 (*agree strongly*). To reduce response bias, the scale includes some negatively worded items, which were reversed prior to analysis. High subscale and total scores pertain to high levels of well-being. Although there are longer versions of the scale, this shorter scale is more practical and evidence has supported the six factor structure of this scale (Ryff & Keyes, 1995).

Posttraumatic stress.

PTSD symptomatology was measured with the Impact of Events Scale-Revised (IES-R; Weiss & Marmar, 1997). The 22-item scale measures the factors of hyperarousal, intrusion, and avoidance, which are in accordance with the DSM-IV-TR criteria for PTSD (APA, 2000). Participants were required to rate the extent to which they found these symptoms distressing in relation to the past seven days, on a 5-point scale ranging from 0 (*not at all*) to 4 (*extremely*). High subscale and total scale scores indicate higher distress and higher levels of PTSD symptomatology. The scale has strong internal consistency ($\alpha = .96$).

Posttraumatic growth.

The 21-item Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) measures the degree of PTG experienced by participants following their struggle with trauma in the areas of Personal strength, Appreciation of life, Spiritual changes, New possibilities, and Relating to others. Participants respond on a 6-point scale, ranging from 0 (*I did not experience this change as a result of my crisis*) to 5 (*I experienced this change to a very great degree as a result of my crisis*). High subscale and total scores reflect higher growth. The scale has satisfactory construct and convergent validity (Shakespeare-Finch & Enders, 2008),

and yielded adequate internal consistency when originally developed ($\alpha = .90$, Tedeschi & Calhoun, 1996).

Procedure

Ethical approval for this study was obtained from the QUT Human Research Ethics Committee (Approval Number #1000001344), and permission for the study was sought and gained from the Commissioner of the Ambulance service. Information regarding the nature and purpose of the research, expected benefits and risks, confidentiality, and the right to withdraw, preceded voluntary completion of the questionnaire. Key Survey software was used to create the survey, which was distributed in May 2012 by sending an email including an explanation of the study, a participant information sheet, and a survey link to the communications centre managers. The managers then sent a group email to all staff to ensure anonymity.

Results

Missing Data

Results were analysed using the Statistical Package for the Social Sciences (SPSS, version 19). There was a small amount of randomly occurring missing data evident using the Little's MCAR test, $\chi^2(218, N = 60) = 35.62, p = 1.000$. This missing data was replaced with the subscale mean for the individual. Only 44 of the 60 participants reported experiencing a trauma. Therefore, whilst 60 EMDs were included in the analyses predicting well-being, there were only 44 EMDs included when examining predictors of PTSD symptoms and PTG.

Main sample.

Overall, the high means and limited variability of self efficacy, and social support measures, indicated that the majority of EMDs reported high levels of self efficacy, total social support, and the giving of social support. The high mean for receiving social support also signified that a majority of EMDs perceived receiving a high amount of social support,

though there was wide variability indicating that some EMDs received notably higher or lower social support than the mean level. A majority of the EMDs also reported relatively high psychological well-being across all factors. Cronbach's alpha indicated adequate reliability for all scales in the main sample. Table 1 displays descriptive statistics for the scales, including means, skewness and reliabilities, for the main sample.

Please place Table 1 here

Trauma subsample.

The low means for the total PTSD scale and the PTSD subscales suggested that most EMDs did not report high levels of PTSD symptomatology. However, the high variability indicated that scores varied widely around the mean, suggesting that some EMDs evidenced considerably higher or lower distress than was indicated by the aggregated mean score. The moderate means and high variability in total PTG and the PTG domains indicated that most EMDs evidenced moderate levels of PTG, though again, there was considerable variability in the data. Cronbach's alpha indicated adequate reliability for all scales in the trauma subsample. Descriptive statistics, including the means, skew and scale reliabilities for the trauma subsample, are presented in Table 2 below.

Please place Table 2 here

Table 3 outlines correlations between the predictors and psychological well-being. Particularly strong correlations were found between psychological well-being and receiving social support, $r = .62, p < .001$, and psychological well-being and self efficacy, $r = .60, p < .001$. There were also significant correlations detected between well-being and PTG ($r = .36, p < .01$) and between well-being and symptoms of PTSD ($r = -.42, p < .001$)

Please place Table 3 here

Regression analysis predicting psychological well-being.

To determine significant predictors of psychological well-being, a 2-step hierarchical multiple regression was conducted with the main sample. Shift-work status and being a trained peer support officer were entered into Step 1 of the model in order to control for these variables. This step was not significant, explaining 6.7% (R Square) of the variance, $F(2, 57) = 2.04, p = .139$. Due to the strong correlations between self efficacy, receiving support, and giving support with psychological well-being, these variables were entered into Step 2, and significantly explained an additional 60% of the variance, $F \text{ Change } (3, 54) = 31.95, p < .001$.

The overall model was significant, explaining 66.4% of the variance in psychological well-being, $F(5, 54) = 21.32, p < .001$. The significant and positive predictors in this model were self efficacy, explaining 22% of unique variance, and receiving social support, explaining 21% of unique variance. Shift-work, being a trained peer support officer, and giving social support were not significant predictors in this model. Table 4 displays the unstandardised coefficients, confidence intervals, betas, and significance at both steps for all variables in this psychological well-being regression.

Please place Table 4 here

Post-trauma Analyses: Trauma Subsample

Regression analysis predicting posttraumatic stress.

A 2-step hierarchical multiple regression analysis was conducted with the trauma subsample to establish significant predictors of PTSD. Shift-work and trained peer support officer were entered in Step 1, significantly explaining 31.8% of the variance, $F(2, 41) = 9.56, p < .001$. Shift-work was a significant predictor in this step, explaining 31% of unique variance (see Table 5). Self efficacy, receiving support, and giving support were entered in Step 2, and significantly explained a further 15.8% of the variance, $F \text{ change } (3, 38) = 3.83, p = .017$. The overall model was significant, accounting for 47.6% of the variance, $F(5, 38) = 6.91, p < .001$. The significant negative predictors were receiving support, explaining 15% of

unique variance, and shift-work, explaining 14% of unique variance. Being a trained peer support officer, self efficacy, and giving support were not significant predictors in this model.

Please place Table 5 here

Regression analysis predicting posttraumatic growth.

To ascertain significant predictors of PTG, a hierarchical multiple regression with two steps was conducted, based on the trauma subsample. Shift-work and being a trained peer support officer were entered in the first step to control for these variables, which was not significant explaining only 5% of the variance, $F(2, 41) = 1.00, p = .378$. Self efficacy, receiving social support, and giving social support were entered in the second step, and these variables significantly explained an additional 21.6% of the variance, F change (3, 38) = 3.70, $p = .020$. The overall model was significant, explaining 26.2% of the variance in PTG scores, $F(5, 38) = 2.70, p = .035$. Only receiving social support was a significant and positive predictor in this model, explaining 20% of unique variance. The unstandardised coefficients, confidence intervals, betas and significance for this PTG regression are presented in Table 6.

Please place Table 6 here

Discussion

This study sought to determine predictors of psychological well-being, PTG and symptoms of PTSD in EMDs. Results yielded mixed support for the hypotheses; however, all three models were found to be significant with differing amounts of the variance in outcomes explained. Self efficacy and receiving social support were found to be significant predictors of psychological well-being. Receiving social support was also found to be a significant predictor of PTSD and of PTG. Shift-work emerged as a significant predictor of PTSD. No relationship, linear or curvilinear, was found between PTSD and PTG. The specific

hypotheses relating to the models are examined in detail in the following sections and are related to existing literature.

Shift-work and Well-being

Contrary to the hypothesis, shift-work was not found to significantly predict well-being. This finding may be explained by the fact that the EMDs self-selected into a shift-working role, and therefore these individuals may not perceive shift-work as a significant stressor (Harrington, 2001). The results of a meta-analysis conducted by Saksvik, Bjorvatn, Hetland, Sandal, and Pallesen (2011) suggested that there are a variety of individual factors that determine differences in shift-work tolerance, indicating that certain individuals are less affected by shift-work than others. It is plausible that individuals with a high tolerance for shift-work opt for a shift-working role, and this may explain why shift-work in the current study did not impact on well-being.

Shift-work and PTSD

Although shift-work significantly predicted PTSD, it emerged as a negative predictor rather than the expected positive predictor. A reason for this finding may be that EMDs working shift-work have developed a social network to support each other, as receiving social support was also significantly and positively correlated with shift-work. Although shift-work has been proposed to reduce support networks due to having decreased time available to socialise outside of work (Costa, 1996), it is possible that for this reason, EMDs actively created a support network with each other. This type of support from work colleagues may be more beneficial, as previous literature attests to the value of receiving support from work colleagues, who have a deeper understanding of the stressors involved in the work role (Rodwell et al., 2011). Alternatively, shift-work may offer the opportunity for EMDs to gain solitude during non-work hours, which may allow EMDs to relax during leisurely periods (Harrington, 2001).

Trained Peer Support Officers

Contrary to the hypothesis, whether or not EMDs were a trained peer support officer did not significantly predict well-being, PTG or symptoms of PTSD. Trained peer support officers receive education around the nature of trauma and coping strategies (Shakespeare-Finch & Scully, 2004) and for this reason were expected to report higher well-being.

Although peer support officers are provided with additional training around coping skills, the highly effective Employee Assistance Program (EAP) is available to all ambulance staff (Shakespeare-Finch & Scully, 2004). Therefore, peer support training may not provide additional value, given the already high education and awareness among staff through their EAP.

Self Efficacy, Well-being and Post-trauma Responses

Consistent with the hypothesis and previous emergency services literature (e.g., Prati et al., 2010) self efficacy was found to positively predict well-being, indicating that increases in self efficacy were related to increases in well-being. This finding may be explained by social cognitive theory (Bandura, 1997), as EMDs who believed they were capable of handling tasks effectively, were better able to deal with the stressful nature of the job, and therefore experienced greater well-being. However, self efficacy was not found to significantly predict PTSD or PTG, which was contrary to the hypotheses and to previous literature (e.g., Heinrichs et al., 2005). This finding may be explained by the lack of control afforded to EMDs when dealing with vicarious work trauma. Unlike paramedics who are faced with work-related traumatic events in person and are able to act accordingly, EMDs are faced with vicarious work trauma over the phone and are therefore restricted in the practical assistance they can provide and in knowledge of the outcomes of their assistance. A lack of direct control may explain why self efficacy was not found to predict PTSD or PTG in this

study. Self efficacy has not been implicated in the development of growth (Calhoun & Tedeschi, 2006).

Giving Social Support, Well-being, and Post-trauma responses

Contrary to the hypotheses, giving social support was not a significant predictor of well-being, PTG or PTSD. Given the nature of the role, EMDs may not have the emotional capacity to provide high levels of support to friends and family in their personal life, after already providing support to callers during their shifts. As giving support is inherent in the role, EMDs may require the receipt of support from their loved ones to assist in dealing with the stressful aspects of their job, rather than providing additional support to others outside of working hours.

Receiving Social Support, Well-being, and Post-trauma Responses

As hypothesised, receiving social support significantly and positively predicted well-being. This finding is consistent with previous literature examining emergency service workers, which also found receiving support to be associated with greater well-being (e.g., Rodwell et al., 2011). As this population of EMDs are faced with considerable stress in their work role, the finding may be explained by the stress buffering hypothesis, which recognises that receiving support from others helps to buffer against the harmful effects of stress through gaining alternative perspectives and advice (Cohen & Wills, 1985). Receiving social support significantly and negatively predicted PTSD, indicating that receiving social support was related to lower levels of PTSD, and that receiving low levels of social support predicted higher PTSD symptomatology. Receiving support may help to decrease avoidance of the trauma through acknowledging and processing the event. Further, receiving support from colleagues has been found to be highly important in reducing PTSD in other emergency services (Stephens et al., 1997). Consistent with the hypothesis and previous literature (Kirby et al., 2011), receiving social support also significantly and positively predicted PTG. This

finding provides support for the PTG model, which proposes that receiving social support is an important element in the development of growth (Calhoun & Tedeschi, 2006). The receipt of social support provides the individual with an opportunity to re-construct their life narrative, in a manner that allows the integration of the traumatic experience.

Relation to Theoretical Framework

The finding that self efficacy and receiving social support were significant positive predictors of well-being supports a salutogenic theoretical perspective. EMDs capable of utilising the resources of self efficacy and social support were able to maintain or enhance their well-being, even in a stressful occupation (Antonovsky, 1996). Similarly, among EMDs who reported the experience of trauma, those EMDs who received social support experienced lower levels of PTSD symptomatology and higher levels of PTG. These findings highlight that rather than inevitably experiencing negative outcomes in response to stress or trauma, EMDs are capable of responding to such experiences with enhanced well-being and growth, as proposed by salutogenesis (Antonovsky, 1996).

Implications

The results of the current study, in combination with the theory of salutogenesis, suggest that efforts aimed at increasing self efficacy and receiving social support are likely to facilitate psychological well-being in EMDs. Additionally, receiving support appears to be implicated in enhancing growth and reducing distress following trauma exposure. These findings highlight the need to provide staff support services within the organisation, and to encourage EMDs to seek social support. When added to the previous body of emergency services literature, the results of this research suggest that encouraging EMDs to seek support from each other may further facilitate well-being through increasing social support systems. The findings in this study also highlight the need to provide education around increasing self efficacy in order to facilitate the well-being of EMDs. Enhancing the self efficacy of EMDs

may help to increase their beliefs that they are capable of maintaining or enhancing their well-being when responding to the stressors inherent in the role, and that they are capable of responding to stressors without inevitably experiencing reduced well-being.

Strengths and Limitations

The cross-sectional, retrospective and self-report design of the current study may reduce generalisability (Bauhoff, 2011). Self-report and retrospective studies may introduce bias as the memory of respondents may be fallible, respondents may hold biases in their self view, or respondents may falsify answers to present in a socially desirable manner (Bauhoff, 2011). However, self-report was the most viable and accurate way to measure the constructs in this study, and the anonymity of responses is assumed to reduce the potential for self-report bias. Although the cross-sectional nature restricts the inference of causal relationships, the use of well-validated and reliable scales helped to increase the rigour of the findings. The social support scale assessed the giving and receiving of support in terms of life in general, rather than in the context of the EMD role, which should be considered when interpreting the lack of significant findings with giving social support, as the scale did not specifically measure the support EMDs give within their work role.

The current study used a small sample size, particularly in the trauma subgroup, which may have reduced the power to find significant results; however, the results demonstrated strong effect sizes lending confidence in the findings. The high response rate of 50% afforded a clearer picture of the well-being of these particular EMDs although there may still be a response bias in the potential for the 50% of non-responders to be systematically different to the responders. This study offered a considerable contribution to the gap in the emergency communications literature given it represents the first published research to assess general well-being and post-trauma responses in EMDs, thus creating an exciting platform for future research.

Future Research

Replication of this study with a larger sample would allow for greater generalisability, and would be an important step in determining if social support and self efficacy are potential targets for intervention in this area. This study should also be replicated in other states and countries, to ascertain whether the relationships found in the current study are different in areas with higher populations or in organisations with differing education and support. Following replication in this group of EMDs, replication with other communications officers, such as fire communications officers, would determine whether the relationships reported with EMDs are different among other communications personnel. To gain a better understanding of the impact of giving social support on well-being within the EMD context, future research could adapt the social support scale to reflect the support that EMDs may give to callers as specifically related to their work role.

Conclusion

The current study has begun to fill a substantial gap in the emergency services literature, by conducting the first known study to assess well-being and post-trauma responses among EMDs, and is the first known research with Australian EMDs. While there is much more research to be conducted with this population, the current study has provided a platform for further research. Given that EMDs provide an important service to the community and are faced with considerable stressors in doing so, it is vitally important that the well-being of EMDs is prioritised and enhanced. This study therefore provided a valuable contribution to the emergency services and telecommunications literature, in identifying that self efficacy and receiving support are likely to enhance well-being and PTG in EMDs. These factors are amenable to change and may be investigated in future studies, with the potential to provide an avenue to enhancing the well-being of EMDs.

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Table 1

Descriptive Statistics and Reliabilities for the Main Sample (N = 60)

Scale	<i>M</i> (<i>SD</i>)	95% CI	Possible Scale Range	Skew	α
Self Efficacy	33.02 (3.95)	[32.00, 34.04]	8-40	-0.11	.90
Receiving Social Support	43.28 (11.15)	[40.40, 46.16]	0-55	-1.57	.95
Giving Social Support	37.00 (5.13)	[35.67, 38.33]	0-45	-0.73	.86
Total Social Support	80.28 (13.27)	[76.85, 83.71]	0-100	-1.23	.91
PWB Autonomy	30.05 (4.73)	[28.83, 31.27]	7-42	-0.17	.70
PWB Personal Growth	33.75 (4.46)	[32.60, 34.90]	7-42	-0.37	.73
PWB Purpose in Life	33.27 (5.70)	[31.79, 34.74]	7-42	-0.64	.88
PWB Env Mastery	31.32 (5.90)	[29.79, 32.84]	7-42	-0.81	.82
PWB Positive Relations	31.12 (5.61)	[29.67, 32.57]	7-42	-0.54	.77
PWB Self Acceptance	30.12 (6.74)	[28.37, 31.86]	7-42	-0.70	.87
Total PWB	189.62 (26.14)	[182.86, 196.37]	42-252	-0.69	.94

Note. CI = confidence interval; PWB = psychological well-being; PWB Env Mastery = environmental mastery.

Table 2

Descriptive Statistics and Reliabilities for the Trauma Subsample (n = 44)

Scale	<i>M</i> (<i>SD</i>)	95% CI	Possible Scale Range	Skew	α
Self Efficacy	32.57 (3.82)	[31.41, 33.73]	8-40	-0.39	.88
Receiving Social Support	41.52 (11.65)	[37.98, 45.07]	0-55	-1.51	.94
Giving Social Support	36.77 (4.93)	[35.27, 38.27]	0-45	-0.57	.85
Total Social Support	78.30 (13.08)	[74.32, 82.27]	0-100	-1.29	.90
PTSD Intrusion	7.37 (8.16)	[4.73, 9.68]	0-32	1.11	.95
PTSD Avoidance	6.19 (6.12)	[4.18, 7.91]	0-32	0.98	.86
PTSD Hyperarousal	3.88 (5.59)	[2.11, 5.48]	0-24	1.76	.93
Total PTSD	17.44 (18.05)	[11.56, 22.53]	0-88	1.15	.96
PTG Personal Strength	10.52 (4.95)	[9.02, 12.03]	0-20	-0.22	.80
PTG Appreciation of Life	9.68 (3.36)	[8.66, 10.70]	0-15	-0.97	.86
PTG New Possibilities	10.05 (6.44)	[8.09, 12.00]	0-25	0.27	.87
PTG Relating to Others	14.52 (8.40)	[11.97, 17.08]	0-35	0.48	.90
PTG Spiritual Change	3.11 (2.93)	[2.22, 4.00]	0-10	0.49	.74
Total PTG	47.98 (22.82)	[41.03, 54.75]	0-105	0.18	.95

Note. CI = confidence interval; PTSD = posttraumatic stress disorder; PTG = posttraumatic growth.

Table 3

Bivariate Correlation Matrix for the Main Sample (N = 60)

	1	2	3	4	5
1. Shift-work	-				
2. T-PSO	.21	-			
3. Self Efficacy	.09	-.01	-		
4. GSS	-.02	.07	.23	-	
5. RSS	.38**	.07	.17	.22	-
6. PWB	.25	.12	.60***	.35**	.62***

Note. T-PSO = trained peer support officer; GSS = giving social support; RSS = receiving social support; PWB = psychological well-being.

* $p < .05$. ** $p < .01$. *** $p < .001$ (2-tailed).

Table 4

Hierarchical Multiple Regression Analysis Predicting Psychological Well-being (N = 60)

Variable	Step 1					Step 2				
	B	CI	β	sig	sr ²	B	CI	β	sig	sr ²
Shift-work	15.07	[-1.91, 32.06]	.23	.081	.05	-0.03	[-11.43, 11.36]	-.00	.995	.00
T-PSO	5.40	[-13.63, 24.43]	.07	.572	.01	6.25	[-5.56, 18.05]	.09	.293	.01
Self Efficacy						3.25	[2.16, 4.33]	.49	.000	.22
GSS						0.61	[-0.24, 1.47]	.12	.156	.01
RSS						1.19	[0.77, 1.60]	.51	.000	.21

Note. CI = confidence interval; T-PSO = trained peer support officer; GSS = giving social support; RSS = receiving social support.

Table 5

Hierarchical Multiple Regression Analysis Predicting Posttraumatic Stress (n = 44)

Variable	Step 1					Step 2				
	B	CI	β	sig	sr ²	B	CI	β	sig	sr ²
Shift-work	-25.37	[-37.22, -13.52]	-.57	.000	.31	-18.47	[-30.10, -6.83]	-.42	.003	.14
T-PSO	2.47	[-9.93, 14.86]	.05	.690	.00	2.27	[-9.11, 13.65]	.05	.688	.00
Self Efficacy						-0.11	[-1.35, 1.14]	-.02	.860	.00
GSS						0.50	[-0.46, 1.45]	.14	.299	.02
RSS						-0.64	[-1.04, -0.24]	-.42	.002	.15

Note. CI = confidence interval; T-PSO = trained peer support officer; GSS = giving social support; RSS = receiving social support.

Table 6

Hierarchical Multiple Regression Analysis Predicting Posttraumatic Growth (n = 44)

Variable	Step 1					Step 2				
	B	CI	β	sig	sr ²	B	CI	β	sig	sr ²
Shift-work	12.07	[-5.46, 29.61]	.22	.172	.04	4.31	[-12.97, 21.59]	.08	.617	.00
T-PSO	-5.17	[-23.51, 13.17]	-.09	.572	.01	-5.89	[-22.79, 11.02]	-.10	.485	.01
Self Efficacy						-0.38	[-2.22, 1.47]	-.06	.683	.00
GSS						0.46	[-0.95, 1.88]	.10	.512	.01
RSS						0.93	[0.34, 1.52]	.48	.003	.20

Note. CI = confidence interval; T-PSO = trained peer support officer; GSS = giving social support; RSS = receiving social support