

Health and Disability

The possible benefits of difficulty: How stress can increase and decrease subjective well-being

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This study explores the effects of stress, trauma, coping and growth orientation on subjective well-being. Based on cognitive stress theory, it was hypothesized that adversity may contribute to increased or decreased well-being, depending on the subsequent meaning these experiences are given. Survey data from Norwegian UN/NATO veterans ($N = 142$) showed that stress and well-being were negatively associated ($r = -0.20$, $p < 0.05$) at the level of zero-order correlations. However, a full structural equation model revealed that the effect of stress on well-being was mediated positively through a problem-focused coping process combined with a growth component. Stress was negatively mediated through an avoidant-focused coping process and a distress component. The effect from stress was fully mediated in the model. The hypothesis that stress can produce both increased and decreased subjective well-being was confirmed.

Key words: PTSD, growth, stress, coping, subjective well-being, UN/NATO veterans.

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INTRODUCTION

Research on life crises and stress has mainly focused on their negative consequences as it is clear that difficult circumstances often may be distressing and harmful. However, increasing attention has also been given to positive consequences of potentially traumatizing events, such as the opportunities they provide for dealing with challenges and grow as a person (Linley & Joseph, 2004). This research field builds on, and is related to, existential psychology (e.g., Frankl, 1963; Yalom & Lieberman, 1991) and positive psychology (e.g. Seligman & Csikszentmihalyi, 2000) where ways that crises offer possibilities for personal change have been an important area research topic. Folkman and Lazarus (1985) argued that stress should be defined as something with relevance for a person's well-being, and that stress represents a potential threat as well as a potential for growth. This distinction is more recently elaborated by Blascovich and his colleagues (Blascovich, Mendes, Hunter & Salomon, 1999). Moreover, Tedeschi, Calhoun and Park (1998) have developed a theory of what they refer to as posttraumatic growth, and Dienstbier (1989) presented a model of physiological toughness in which he spells out the biological correlates of stressful growth processes.

The aim of the current article is to present empirical data that illustrates how difficult situations can be handled in different ways, so that the stress they produce may either increase or decrease subjective well-being.

People exposed to even the most stressful events may perceive at least some good emerging from their struggle, and occur in several domains, e.g. changes in self, philosophy of life and spiritual/existential beliefs and social relationships (Tedeschi *et al.*, 1998). Some evidence in support of this view comes from soldiers in combat. For instance, a study conducted on Vietnam veterans indicated that experiencing war imprisonment made these veterans feel more optimistic (Sledge, Boydstun & Rahe, 1980). These soldiers believed they had got more self insight, and felt better able to differentiate the important from the trivial, claimed greater patience, human understanding and appreciation of communications with others. The subjective sense of having benefited from this stressful event was strongly related to the harshness of the experience. Similarly, Tedeschi and Calhoun (1996) reported that the more stressful the event, the more growth the individual experiences.

Even if dangerous experiences and adversity may have positive consequences, people who face life crises typically also report distressing emotions, and some of them may develop post-traumatic stress disorder (PTSD). PTSD is among the most common serious negative psychological consequences following stressful events, characterized by symptoms of intrusive recollections, arousal and avoidance. Although the present study focuses on possible benefits of stressful events, one should also bear in mind that these experiences bear with them the threat of severe harm and serious losses. For instance, a study of UN soldiers (Mehlum,

1994; Weisaeth, Aarhaug, Mehlum & Larsen, 1993) reported that approximately 5% of the veterans had PTSD. Further studies of Norwegian veterans serving in former Yugoslavia confirm the presence of post-traumatic stress-reactions in UN personnel (Fransplass, Sondov, Stave & Øien, 1996).

Stress and coping

UN soldiers may encounter a variety of stressors during a mission, including the need to cope with unpredictability, managing shifting rules of engagement and struggling with conflicting personal and political views on the mission (Lundin & Otto, 1996). It is well established that stress is a process involving a series of physiological and psychological changes. From a cognitive point of view, appraisals are important in the stress process because they affect people's perception of and reactions to difficult situations. Whereas primary appraisal deals with the immediate evaluation of defining a situation as good or bad, secondary appraisals are used to evaluate response options and choose coping behaviors (Lazarus, 1991). The secondary appraisals are sometimes treated as three distinct ways of coping: emotion-focused, problem-focused and avoidance-focused coping. The two former, which include strategies such as avoiding or minimizing the problem (emotion-focused) or taking steps to solve the problem (problem-focused), seem to be the most efficient ways of coping with stress (e.g., Strentz & Auerbach, 1988). Problem solving or instrumental self-management are generally perceived as adaptive or protective strategies, and have been linked to successful coping in high performance/high stress situations (Larson & Hayward, 1990; Larsson, Kempe & Starrin, 1988). Emotion-focused coping has been related to lower levels of post-traumatic stress reactions through crisis support (Joseph, Williams & Yule, 1992), and findings in a military sample indicate that emotion-focused strategy is a resilient coping strategy (Eid, 2000). A number of studies have found that avoidance-focused coping in general is positively tied to concurrent acute and chronic stress (Bartone, 1989; Bryant & Harvey, 1995; Johnsen, Laberg & Eid, 1998; Miculincer, Florian & Weller, 1993).

In addition to the coping strategies above, a stressful event may involve other cognitive processes. For instance, Dalgliesh (1999) argues that until the stressful experience is "resolved" or fully integrated into a person's existing cognitive schema of the world, it represents a continuing threat and intrusion for the persons experiencing it. According to this view, symptoms of PTSD, like avoidance and hypervigilance, are highly adaptive ways of dealing with emotional distress, which the schema inconsistency provokes. Post-traumatic stress reactions are thus seen as ways to deal with a schema inconsistency produced by external stressors. The schema inconsistency constitutes a continuing threat and intrusion for the individual.

Schemas are believed to provide meaning to events (Tedeschi & Calhoun, 1995). If the process of managing a stressful

event is seen as particularly meaningful, schematic change and subsequently growth will occur. Stressful events that challenge basic assumptions or schemas of the world set the stage for a process of rumination. This rumination, which is usually accompanied by significant levels of psychological distress, provides the foundation from which new insights about life can emerge. To capture these processes empirically, Tedeschi and Calhoun (1996) developed an inventory of posttraumatic growth, which is utilized in the current study.

The current study

The aim of the present study was to illustrate empirically how individuals deal with stress in ways that serve either as an opportunity for growth and enhanced subjective well-being, or to serve as a source of distress and to diminish subjective well-being. We made the following predictions:

- (1) Overall, exposure to stressful events will reduce subjective well-being.
- (2) The effect of stress on well-being will be differently mediated by distinct coping processes in such a way that (a) Problem- and emotion-focused coping will increase the growth aspect of stress, and (b) Avoidance-coping will increase the distressful aspects of stress.
- (3) Stress mediated through Growth will increase subjective well-being.
- (4) Stress mediated through Distress will decrease subjective well-being.

METHOD

Participants

A pilot tested questionnaire, an information leaflet, a peer support group leaflet and a prepaid envelope were sent by mail to 350 veterans, randomly drawn from the address list of members of the Association for UN/NATO veterans containing approximately 3,800 members. A total of 153 veterans responded, yielding a total response rate of 45%. Among these, eleven persons completed less than 50% of the questionnaire items and were excluded from the analysis. The usable number of participants was thus 142 yielding a response rate of 42%. Fewer than ten women participated in the study, and because of this low number, no analyses based on gender were conducted. The mean age of participants was 48 years with the average number of school years being 13 years. The majority were married or lived with their partner, and more than one-third had children living at home. Concerning military rank, 47% were officers and 45% were privates. Sixty-four percent of the veterans had served more than one term in mission. The most frequent places for mission were Lebanon, Gaza, Bosnia, Kosovo, Congo and Somalia.

Pilot testing

Prior to creating the questionnaire, three personal interviews were carried out as a pilot test. The aim of these interviews was to see if the questionnaire was meaningful to the UN/NATO veterans, and use the feedback to improve the questionnaire and reduce possible negative experiences for the participants.

Ethical considerations

This project was carried out in cooperation with the National Association for UN/NATO veterans to ensure relevance to those involved. The Regional Ethical Committee in Northern Norway gave advice on ethical questions, and had no objections to the final project proposal. Before the personal interview began, the veterans signed a form confirming informed consent. As questions about stressful events may be experienced negatively, a leaflet about peer support groups all over the country and containing phone numbers was attached to the questionnaire. A few recipients of the questionnaire contacted the investigators to give positive or negative feedback. Information about the results of the study has been given to the participants through the National Association for UN/NATO veterans. To ensure anonymity and to respect veterans' choice of not participating, no reminder was sent out.

Instruments

Stress. Ten possible stressful events were listed on the first page of the questionnaire. The first six have earlier been used in a UNIFIL follow up study (Mehlum, 1994), and some stressful events also matched categorized events by Fransplass *et al.* (1996). Based on the information provided in the pilot interviews, four stressful events were added to the list of possible stressful events. These were, "not knowing what was going to happen, unpredictability", "not knowing the culture", "to differentiate between being an UN soldier and being a private person" and "not being able to assist, because my duty was strictly related to observe and report". The participants answered whether they had experienced these events (yes or no), and if yes, the degree to which they had experienced these, from "very little stressful" to "very stressful" followed by a rating scale from 1 to 7. The responses on the rating scale were summarized to a sumscore variable. We treat each item in the stressful event inventory as formative indicators (Bollen & Lennox, 1991), hence no reliability estimates were computed. Neither did we try to fit these data to a common factor model, since the assumption of a common factor is that the factorized items behave in accordance to a reflexive, and not a formative, model (Gorsuch, 1983).

Coping. The Coping strategies were assessed using the 30-item Coping Style Questionnaire (CSQ-30; Joseph, Williams & Yule, 1992). It represents the person's general coping style and not coping related to a specific event. The items are conceptually grouped into three dimensions: problem-focused, emotion-focused and avoidant-focused coping categories giving three scales, each with ten items. Each item has a dispositional format (Carver, Scheier & Weintraub, 1989), and is answered on a four point scale ranging from 1 (I usually do not do this a lot) to 4 (I usually do this a lot). Internal consistency of the total coping scale was high, with a Cronbach's alpha (α) of 0.84. Internal consistency of the subscale problem-focused was high ($\alpha = 0.87$), emotion-focused ($\alpha = 0.76$) and avoidant-focused coping ($\alpha = 0.79$) were satisfactory. To reduce the number of parameters to be estimated in the structural equation model (see below), we did not build a factor model based on these items. Rather, we used the sumscore variables as manifest variables in the model.

Growth. The Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) was used to measure the degree of positive changes related to experiencing stressful events during mission. The scale consists of 21 items and measures perceived changes in self, a changed sense of relationship with others and changed philosophy of life. A six-point format was used ranging from 0 (I did not

experience this change as a result of the stressful event during mission to 5 (I experienced this change as a result of the stressful event during mission). The original instructions scale were adjusted to suit veterans so that the questions were about positive changes related to stressful events during mission. A factor analysis has earlier been performed by Tedeschi and Calhoun (1996) on this scale, and five factors were then extracted. In our sample the internal consistency of these five subscales were as follows. (1) Relating to others ($\alpha = 0.88$), (2) New possibilities ($\alpha = 0.84$), (3) Personal strength ($\alpha = 0.76$), (4) Spiritual change ($\alpha = 0.66$), and (5) Appreciation of life ($\alpha = 0.78$). When included in an exploratory factor analysis, 18% of the variance in the five subscales were accounted for by the first factor (Eigenvalue = 3.21), the next factor had an Eigenvalue of 0.68, accounting for 13% of the variance. One could thus conceive of these subscales as part of a higher-order growth concept, and the internal consistency of the total growth scale was high ($\alpha = 0.93$). In a subsequent structural equation model we used the five sumscore-variables as manifest indicators of a growth factor (see below). Conceptually, this factor is a second-order factor, although statistically it is treated as a first-order factor.

Distress. One of the most commonly used measures in trauma research is the Impact of Event Scale (IES; Horowitz, Wilner & Alvarez, 1979), which has been found to correlate well with PTSD measures (Joseph, Williams & Yule, 1997; Mollica & Caspi-Yavin, 1991). The 15-item test had a four-point response scale, from 1 ("not at all") to 4 ("often"). Two subscales are reported for the IES: Intrusion and Avoidance. In our data, the Intrusion subscale had a Cronbach's alpha of 0.89, whereas the Avoidance subscale had $\alpha = 0.85$. The two sumscore variables were highly correlated ($r = 0.77$, $p = 0.000$), and the internal consistency for the entire Distress scale was high ($\alpha = 0.92$). As for the growth factor, the subscales were used as manifest indicators in the factor model. Again, this model is technically speaking a first-order factor, but from a conceptual point of view it reflects a second-order factor.

Subjective well-being. The Delighted-Terrible scale (Andrews & Whitey, 1976) is a single item subjective well-being instrument measuring how individuals feel about their lives in the present time. This instrument correlates with a series of emotionally related measures of life quality, and is a strong indicator for well-being (Sandvik, Diener & Seidlitz, 1993). The DTS has a nine-point response format, anchored in a 1 ("terrible") to 7 ("delighted") scale, with 4 labeled as "mixed feelings". In addition, the scale had a response alternative labeled "neutral" and another labeled "I have never thought of it". Before performing analyses we recoded the "I have never thought of it"-category into missing data, and the "neutral"-category as "mixed feelings".

Analysis

Data were analyzed with SPSS for Windows (version 13.0), and EQS for Windows (version 6.1). Descriptive statistics were used to explore the variables, and Pearson product-moment correlations were used to determine their zero-order associations. A full structural equation model (SEM) was used to investigate the factor structure of the Growth and Distress scales, and the mediating effects of Coping, Growth and Distress. This model was evaluated against the following goodness-of fit criteria: (1) a Chi-square (χ^2) statistics, (2) a Comparative Fit Index (CFI), and (3) the Root Mean Square Error of Approximation (RMSEA). Good fit between the hypothesized model and the observed data is indicated by a non-significant χ^2 , a CFI above 0.95, and a RMSEA below 0.06 (Hu & Bentler, 1999).

Table 1. *Participants exposure to stressful events and how stressful they perceived these (N = 133)*

Type of event	Veterans exposed (%)	Perception of stressful exposure	
		<i>M</i>	<i>SD</i>
1. Unpredictability	85	4.7	1.7
2. Bombardment	65	4.9	1.7
3. Witnessed violence and attacks against civilians	62	5.0	1.4
4. Foreign culture	56	3.1	1.4
5. To separate the role between private and soldier	56	3.1	1.6
6. Military humiliations/insults	53	4.4	1.7
7. Not being able to give help when needed, because of UN role	44	4.3	1.7
8. Intervened to protect civilians against such violence	44	4.7	1.5
9. Regular combat	40	4.9	1.6
10. Witnessed people being killed in actions of warfare	38	4.9	1.7

Table 2. *Means, standard deviations and correlations for the study variables (N = 142)*

	1.	2.	3.	4.	5.	6.	7.
1. Stress	1.00						
2. Coping-Emotion	0.12	1.00					
3. Coping-Task	0.16*	0.47***	1.00				
4. Coping-Avoidance	0.19*	0.07	-0.04	1.00			
5. Growth	0.23**	0.51***	0.50***	-0.01	1.00		
6. Distress	0.35***	0.20*	0.07	0.48***	0.33***	1.00	
7. SWB	-0.20*	0.04	0.05	-0.27***	0.11	-0.24**	1.00
<i>M</i>	4.25	2.13	2.61	1.71	2.67	1.76	5.26
<i>SD</i>	1.30	0.48	0.61	0.50	0.94	0.94	0.92

Note: SWB = Subjective well-being; *M* = Mean; *SD* = Standard deviation.

* $p \leq 0.05$; ** $p < 0.01$; *** $p < 0.001$.

RESULTS

Stress

The most frequent subjective stressful events mentioned first were: being fired at (19%), threatened with weapons (9%), experiencing harassment of civilians and UN/peer soldiers (6%) unpredictability and insecurity (6%), to observe and not be able to do anything (4%), work/duty load (4%), war between the parties (4%) and bombardment (4%). Most veterans (85%) had experienced unpredictable stressful events and fewest had witnessed people being killed in actions of warfare (38%). Percentages of veterans exposed to different stressful events, and means and standard deviations of stress level associated with these events are presented in Table 1. The mean score on how stressful they perceived the exposure was 4.3 ($SD = 1.3$). Witnessing violence and attacks against civilians was perceived as most stressful ($M = 5.0$, $SD = 1.4$).

Regarding our first hypothesis, Table 2 shows that stress is negatively correlated with Subjective well being (SWB), thus confirming Hypothesis 1 ($r = -0.20$, $p = 0.026$). Emotion-focused coping is neither associated with Stress nor SWB, whereas Problem-focused coping is positively correlated with Stress. Avoidance-focused coping correlated positively with Stress and negatively with SWB. Growth and

Distress were both positively correlated with Stress. Finally, Distress was negatively correlated with SWB. Based on these results, and in the interest of keeping the structural equation model as simple as possible, Emotion-focused coping was dismissed from further analyses.

The Structural Equation Model

To investigate the possibility of mediator effects (Hypotheses 2, 3 and 4), a full structural equation modeling approach was used (Bollen, 1989). The model is depicted in Fig. 1. It fitted the data reasonably well: $\chi^2(36, n = 130) = 55.04$, $p = 0.022$, $CFI = 0.96$, $RMSEA = 0.06$. In the model, Stress predicts Problem-focused coping, Avoidant-focused coping, and Distress. Stress no longer predicts SWB directly. Problem-focused coping predicts Growth, whereas Avoidant-focused coping predicts Distress. Growth predicts SWB positively (the standardized regression coefficient (β) was 0.26 ($p < 0.001$), and Distress predicts SWB negatively ($\beta = -0.31$, $p < 0.001$). Hypotheses 3 and 4 were thus confirmed. When it comes to our second hypothesis, it was confirmed as far as Hypothesis 2b goes. However, Growth only acted as an indirect mediator between Stress and SWB, since no direct link between Stress and Growth was established. Thus

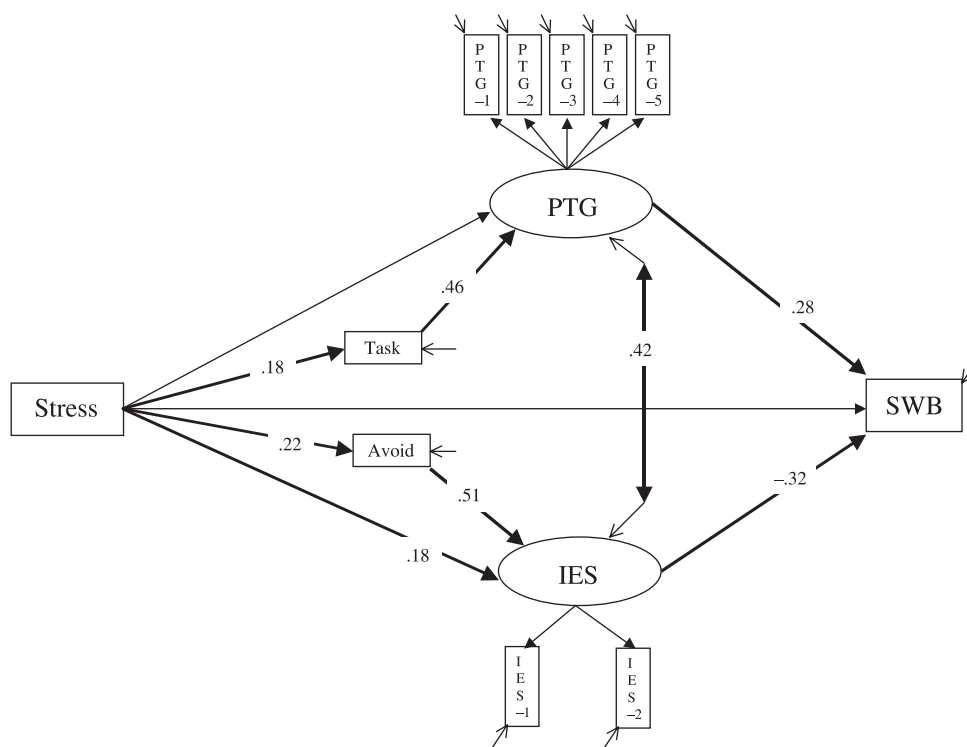


Fig. 1. A structural equation model of stress, coping, growth (PTG), Distress (IES) and Subjective well-being (SWB). All betas are significant at $p < 0.05$.

Hypothesis 2a can only be considered confirmed if the indirect path through Problem-focused coping is included.

In a subsequent analysis, the model was rerun without the two coping variables. This model also fitted the data well ($\chi^2(23, n = 130) = 34.03, p = 0.065, CFI = 0.98, RMSEA = 0.06$), and the paths from Stress to Growth ($\beta = 0.22, p < 0.05$) and Distress ($\beta = 0.36, p < 0.01$) were significant. The paths from Growth and Distress to SWB were both significant (p 's ≤ 0.01), with betas equal to 0.27 and -0.26 for Growth and Distress respectively. The direct path from Stress to SWB was not significant.

DISCUSSION

The study illustrates how coping, trauma and positive meaning making influence the effect of stress upon subjective well-being in veterans. The negative zero-order correlation found between stress and well-being was fully mediated by the intervening variables in a structural equation model. However, it was only the effect mediated through avoidant-focused coping and traumatization that contributed negatively to the variance in the well-being variable. A significant portion of the variance in stress was mediated through problem-focused coping and growth orientation to affect well-being positively. Hence for some veterans stressful events may actually increase the level of subjective well-being.

A relation between growth and adjustment outcomes has been reported in previous studies (Taylor, Brown, Lichtman

& Wood, 1984). However, since growth also is related to post-traumatic distress, the relation between growth and adjustment outcomes is not clear-cut, and Tedeschi and Calhoun (1996) argue that so far the evidence is both limited and inconsistent concerning the relation between growth and adjustment. A number of mechanisms have been proposed to underlie the association between growth and adjustment, including the idea that growth may reflect actual changes in well-being or enhanced functioning. Growth may enable enhanced functioning indirectly by promoting resolution and the making of meaning, or both growth and adjustment may be related to some underlying adaptive variable related to personality functioning or coping. Our results support the idea that growth and coping are related, as problem-focused coping had an indirect effect on subjective well-being through growth experiences. Similarly, both Lazarus and Folkman (1984) and Carver *et al.* (1989) state that growth also can be seen as coping, positive reappraisal or positive reinterpretation of the stressful event.

The association between stress and task-focused coping in the present study might be explained by the suggestion that relief of emotional distress becomes a crucial problem after a stressful event (Tedeschi & Calhoun, 1996). Successful coping aimed at regulating distressing emotions is believed to interact with attempts to reverse the calamity, in that relief of emotional distress allows for more productive problem solving, and vice versa. These findings are also partly consistent with a study by Cantrell (2000) which indicate

that Vietnam veterans without post-traumatic stress reactions used a combination of problem-focused coping and emotion-focused coping. By including growth experiences as an outcome in this study the function of copings strategies has been differentiated.

Avoidant-coping was found to predict post-traumatic stress reactions. The result is in line with previous research, such as those reported in Carver *et al.* (1989) and Eid (2000). In Eid's study, avoidant strategies revealed more acute stress reactions. It is reasonable that avoidant-focused coping predicts post-traumatic stress reactions as one of the main symptoms of PTSD is avoidance behavior. Nevertheless, it cannot be concluded that avoidant-focused coping always is dysfunctional. Coping styles should be viewed according to their effectiveness in specific situations (Zeidner & Saklofske, 1996), and in some situations avoidant-focused coping can be associated with less distress (Gidron, Gal & Zahavi, 1999). However, serving in these types of missions put special demands on soldiers that may be difficult to combine with avoidance behavior or avoidant-focused coping. A part of the UN soldiers' role is to demonstrate self-control and stay in a particular situation to protect others, and it is possible that avoidant-focused coping may be a particularly dysfunctional strategy. The relationship between avoidant-focused coping and post-traumatic stress reactions should be further investigated to understand mechanisms leading to low subjective well-being.

Our study suggests that growth may occur after stressful experiences during mission. Most veterans did not have severe post-traumatic stress reactions, but those who did, also had high growth experiences. Post-traumatic stress reactions and growth may jointly constitute attempts to cope adaptively with feelings and thoughts provoked by the stressful event, and the association thus has a protective function. Thus an important issue for future research is to analyze the degree to which growth is related to psychological distress, as expressed in post-traumatic symptoms in this study on the one hand, and in subjective well-being on the other. The possibility that growth is independent to well-being and distress, as discussed by Tedeschi and Calhoun (1996), is not confirmed in our study. Growth predicts subjective well-being and is associated with post-traumatic distress.

Our results indicate that individual factors, such as coping strategies, play an important role in mediating the effects of stress on distress and growth. Eid (2000) found that contextual factors functioned as a predictor of post-traumatic stress reactions at 4 months after the event for military personnel exposed to a very stressful experience, but after 12 months these played an insignificant role and individual factors emerged as important predictors. Thus, the importance of predictors seemed to change as a function of time. In the present study, time elapsed since return from the last mission varied from 20 years to a few weeks, but there was no specific measure of time since the last stressful event. Our results indicate that coping strategies are important irrespective of time elapsed since the last stressful event.

Limitations

This study relied on single source self-report data and a small number of respondents. Such a design has its limitations. For example, the sample consisted of members of a network post-mission, and may differ from other veterans, and, of course, from the population in general. Since the average age in this study was somewhat high, and many had participated in earlier missions (such as Lebanon), the results may not be representative for younger veterans. Generalizations from this study are also limited by our somewhat low response rate.

According to Saakvitne, Tennen and Affleck (1998), a between-subject perspective, as used in this study, fails to study growth as an intrapersonal process including personal development in the context of understanding people's responses to stressful events. Tennen and Affleck (1996) recommend integrating an intrapersonal perspective, examining unfolding processes related to stressful events over time with a between-individual perspective. A longitudinal design measuring predictors at different points in time is likely to give interesting results, such as the changes due to specific interventions or changes due to time passing.

The use of a structural equation model made it possible to measure both direct and indirect effects of stress on subjective well-being. However, such analyses often require a large sample size, and although ours is not dramatically small, it would be interesting to attempt to replicate the findings with a larger and more general sample.

Conclusion

This study has shown the importance of coping strategies for subjective well-being in the context of post-mission adaptation. Being exposed to stressful events seemed to impact both positive and negative consequences, as manifested by growth experiences and distress reactions. The importance of growth in predicting subsequent well-being indicates that measures of post-traumatic reactions should also include indicators of positive reactions and subjective well-being. Similarly, researchers in the field of well-being should be careful to include a growth perspective in their models. Over time, negative experiences may turn out to be beneficial for individuals who cope with stressful events in a problem-focused manner, and who are further able to grow psychologically from a difficult period of their lives. The study may also be clinically relevant for those working with traumatized clients. Therapeutic intervention may include a focus on functional coping and growth to enhance the process leading to higher well-being.

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