

## Emotional expression and depth processing of trauma and their relation to long-term survival in patients with HIV/AIDS

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### Abstract

**Objective:** This study examined the relationship between emotional expression and depth processing of trauma and long-term survival of patients living with AIDS. A further purpose was to examine the immune, health behavior and psychosocial correlates of emotional disclosure and depth processing. **Method:** Subjects wrote essays describing their reactions to past traumas; these were scored for emotional expression and depth processing (positive cognitive appraisal change, experiential involvement, self-esteem enhancement and adaptive coping strategies). Two HIV-seropositive groups were recruited for this study; long-term survivors (LTS;  $n=46$ ) patients who had survived at least 4 years past a Category C (AIDS defining) symptom prior to starting protease inhibitors and an equivalent HIV-seropositive comparison group (ECOMP<sub>LTS</sub>;  $n=89$ ) who had CD4+ cells between 150 and 500, and had no history of Category C symptoms. The groups were equivalent on age, gender, ethnicity, education, employment, income, sexual orientation and route of infection. **Results:** The

group LTS were significantly higher than the ECOMP<sub>LTS</sub> group on emotional expression and depth processing. Depth processing mediated the relationship between emotional expression and long-term survival status. Depth processing was positively related to CD4+ cell number for women. Emotional expression was also significantly related to viral load (negatively) and to CD4+ cell number (positively) for women only. Interestingly, only depth processing (and not emotional expression) was related to medication adherence and to psychosocial variables (perceived stress and social support). **Conclusions:** Emotional expression and depth processing were related to long-term survival, however, depth processing was the mediator for this relationship and only depth processing was associated with medication adherence, perceived stress and social support. Our results underscore the importance of depth processing (and not just emotional expression) of traumatic experiences for people living with HIV/AIDS. © 2003 Elsevier Science Inc. All rights reserved.

**Keywords:** Emotional expression; Depth processing; HIV/AIDS; Long-term survival

### Introduction

There is considerable variation observed in disease course in those infected with HIV. It is likely that psychological factors are, in part, implicated in this observed variability [1–4]. The management of HIV/AIDS can involve responses to a wide variety of disease-related stressors [5,6]. It is possible that the emotional disclosure and processing of these stressors may impact the health and

immune status of those living with HIV/AIDS, and may represent one of the sources of observed variation in HIV disease progression [7,8].

#### *Emotional disclosure/processing in nonpatient populations*

Although there is considerable research examining the relationship between emotional disclosure of trauma and health and immune outcomes, much of it has been conducted in nonpatient populations. Emotional disclosure has been related to decreases in health center visits, absences from work and self-reported health problems [9–12], although two studies failed to find these effects [13,14].

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Emotional disclosure of healthy subjects has also been related to favorable changes in immune function, such as greater proliferation to antigens over time [9], increased immune system control over Epstein–Barr viral capsid antigen [15–17], higher antibody concentrations in response to hepatitis vaccinations [18] and enhanced natural killer cell function for subjects high in cynical hostility [19].

In addition to emotional disclosure, depth processing of stressful events (e.g., cognitive change, involvement and finding meaning) has been related to beneficial changes in immune function. Comparing three emotional expression conditions (written, verbal and trivial writing), Esterling et al. [16] found that, in addition to group assignment, cognitive change, self-esteem enhancements and seriousness of the trauma predicted greater control of EBV at follow-up. In a follow-up study, the level of experiential involvement was also associated with larger decreases in EBV-VCA antibody titers [17]. These studies provide strong support for the relationship between emotional disclosure and immune function but provide only equivocal evidence relating emotional disclosure to favorable health outcomes. These results also establish the connection between depth processing of stressful experiences and improved control over EBV.

#### *Emotional disclosure/processing in immune-related disease*

Several studies have examined the relationship between emotional expression/processing and health outcomes in patients with chronic illnesses related to immune system dysfunction that may provide some evidence of a pathophysiological link to disease. Smyth et al. [20] reported that written emotional disclosure in patients with asthma or rheumatoid arthritis was related to improved health outcomes at 4-month follow-up that were assessed for some patients to be clinically significant. The effects of a verbal emotional expression intervention on several affective and disease-related outcomes were also examined in patients with rheumatoid arthritis [21]. Patients were randomly assigned to talk about stressful or trivial events. At 3-month follow-up, patients in the stressful disclosure condition reported less affective disturbance and better physical functioning. Also, comparing two groups of patients with HIV, higher levels of emotional disclosure and depth processing (cognitive change, self-esteem enhancements, adaptive coping strategies and involvement) of traumatic experiences were associated with asymptomatic health status in patients with AIDS who had very low CD4+ cell number compared with a HIV-seropositive comparison group [7]. In addition, depth processing was positively related to natural killer cell number, which mediated the relationship between depth processing and healthy survival with AIDS. Bower et al. [8] rated interviews conducted with 40 HIV-seropositive men who had recently experienced an AIDS-related bereavement and reported that men who found meaning had a less rapid decline in CD4+ cells and had lower rates of

AIDS-related mortality at 2–3-year follow-up. These results provide some initial evidence relating emotional disclosure to clinically relevant outcomes in immune-related illnesses and some preliminary results underscoring the relevance of depth processing of trauma to immune and health status in patients living with HIV.

The research reviewed above also raises the question as to the relative contributions of emotional expression and depth processing to related immune system and health benefits. Pennebaker's theory of inhibition [10,11] suggests that emotional disclosure confers health and immunologic benefit by reducing the inhibition associated with denying or avoiding upsetting emotional experiences associated with traumatic or stressful events. More recently, this theory has been modified to include consideration of processing variables such as cognitive change [22,23]. Others have hypothesized that resolution of traumatic experiences is based upon emotional disclosure followed by cognitive reappraisal rather than affective discharge alone [13,14]. In a written emotional expression study [7], it was reported that depth processing mediated the relationship between emotional disclosure and asymptomatic status in patients with AIDS. These results provide some preliminary evidence suggesting that the relationship between emotional disclosure and protected health status, in this patient population, may be governed by the extent to which written emotional disclosure facilitates depth processing of the traumatic experience. A central purpose of our study was to assess the relative contributions of disclosure and/or processing on long-term survival in people living with HIV/AIDS and to determine whether depth processing was the pathway by which disclosure might have its effect on long-term survival.

#### *Purpose*

The primary purpose of this study was to determine whether emotional disclosure (positive and negative expression) and processing (cognitive change, self-esteem enhancement, adaptive coping strategies and involvement) were related to long-term survival with AIDS. A second purpose was to determine whether depth processing mediated the relationship between emotional disclosure and long-term survival with AIDS. A third exploratory purpose of this study was to examine the relationship between emotional expression/processing and disease progression markers in HIV (CD4+ and viral load).

#### **Method**

##### *Subjects*

Two groups of HIV-seropositive subjects were recruited. The first group, long-term survivors of AIDS (LTS;  $n = 46$ ), had survived 4 years past Category C (AIDS defining)

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