Emotion and Health: An overview

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The relationship emotion and health has been a focus of scientific inquiry in psychology for a long time but it occupied pivotal position with the advent of Alexander’s psychosomatic paradigm. Since then, a number of affect related constructs have been explicated with potential implications for health. The present paper makes an attempt to review the role of some affect related constructs in health that have been centre of attention in the contemporary psychological researches. We have reviewed empirical evidences that demonstrate the relationship of such affect related constructs, as emotion regulation, emotional disclosure, emotional intelligence, alexithymia, positive/negative affect, and affect intensity with health. In general, the review suggests that some affect related constructs such as cognitive regulations of emotion, emotional disclosure, positive emotional experiences and most of the dimensions of emotional intelligence have a beneficial influence on the health status of an individual. On the other hand, such affect related variables as effortful suppression of emotions, alexithymia, affect intensity, and negative emotional experiences have adverse consequences for health. As far as the role of valence and magnitude of emotional experience is concerned, the existing literature suggests that high intensity of experienced emotion has an adverse effect on health irrespective of the emotional valence. The potential mediating mechanisms linking various affect related dimensions to health have also been reviewed. Future research, however, is needed to develop an integrated holistic theory of health based on affect related variables.

Emotion-health relationship occupies a pivotal position in the area of health psychology in general and psychosomatic/behavioural medicine in particular. However, the hypothesis that the nature of emotional experience and expression may be an important determinant of one’s health status gained popularity in scientific psychology with the advent of psychosomatic paradigm (Alexander, 1939) of health and illness. Within the psychosomatic paradigm, attempt to suppress negative emotions is the central element leading to the development and progression of various physical illnesses (Alexander, 1939; Alexander and French, 1946; Dunbar, 1954). After few decades of the Alexander’s psychosomatic paradigm, Sifneos (1972) introduced the construct of alexithymia (the core feature is the difficulty in identifying and communicating emotions and feelings) that emerged as an alternative paradigm for linking emotion with health (see Taylor, 1984, 1994 for a review). The continuing efforts of psychologists to link emotion and health lead to the identification of several other affect related constructs that can explain a significant proportion of variance in the health status of an individual. For example, the affective disposition to experience positive and negative emotions (hereafter referred to as positive and negative affectivity), the disposition to experience extremes of emotional states irrespective of the emotional valance (hereafter revered to as affect intensity) have been identified as important predictors of health. Similarly, the ability to control or regulate the experience and expression of emotions (emotion regulation), the tendency to socially share and verbally express traumatic emotional experiences (emotional disclosure), and the ability to perceive, express, understand, monitor and manage emotions (emotional intelligence) are certain other affect related variables that might influence the health status of an individual. In this paper, we have attempted to present an overview of the findings related to the role of the said affect related variables in health and illness.

Emotion regulation and health:

Emotion regulation, that is, the conscious effort for reducing the influence emotion-arousing situation by controlling the experience and expression of emotions has been found to exert significant influence on the health status of an individual (see review by Gross, 1998a). Researchers in this area make a distinction between the conscious effort to suppress expression of emotion and the effort to cognitively restructure the situation or its interpretation so that the situation no longer produces emotional responses (e.g., Gross, 1998). The former is labelled as emotion regulation at response or output level and the latter as emotion regulation at input level in which the antecedents of emotions are cognitively regulated to reduce the emotional influences (Gross, 1998b). This distinction is important for health researchers insasmuch as empirical evidences suggest that the emotion regulation at response level may have detrimental effect on health but the cognitive regulation of emotion at the input level may have beneficial effect on health (Gross, 1998b).

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The emotion regulation at response level (i.e., suppression of emotion) has been found to have deleterious effect on health. For example, the chronic inhibition of sadness and crying has been linked with such respiratory disorders as asthma (Alexander, 1950; Halliday, 1937). Similarly, the chronic inhibition of affiliative tendencies was linked to gastrointestinal disorders, such as ulcers (Alexander, 1950); and the chronic inhibition of anger was found to be associated with cardiovascular disorders, such as hypertension (Alexander, 1939). The view that chronic hostility and anger inhibition are linked to hypertension and coronary heart disease is still popular among health psychologists (e.g., Friedman & Booth-Kewley, 1987; Julkunen, Salonen, Kaplan, Chesney, and Salonen, 1994; Manuck and Krantz, 1986; Smith, 1992; Steptoe, 1993). In addition, innovative hypotheses involving emotion regulation have been proposed which suggest that emotion inhibition may exacerbate minor ailments (Pennebaker, 1990) and that inexpressiveness may accelerate cancer progression (Fawzy et al., 1993; Gross, 1989; Spiegel, Bloom, Kraemer, & Gottheil, 1989).

The emotion regulation strategies involving suppression or inhibition of emotion, thus, appear to be dysfunctional way of emotion regulation. Emotion dysregulation has not only been linked with onset or progression of medical illness but also with various types of mental disorders. For example, Tull (2006) demonstrated that dysregulation of emotion emerged as an important predictor of panic disorder. Recent studies suggest that difficulty or dysfunction in emotion regulation may lead to health compromising behaviour such as substance abuse and may enhance the risk of developing mental health problems among drug users (e.g., Dorard, Brethoz, Phan, Corcos, and Bungener, 2008).

The foregoing studies extend the hypothesis that suppression of negative emotions and/or dysregulation of emotion has a harmful effect on health. However, the mechanism that link emotion regulation and health is still not clear. One popular hypothesis is that suppression of negative emotions enhances the physiological responses, which in long term may produce bodily damage (Krantz and Manuck, 1984). Researchers have shown that emotional suppression leads to acute increases in sympathetic activation of the type discussed in the aforesaid hypothesis (Gross and Levenson, 1993, 1997).

The abovementioned empirical evidences, though, suggest that controlling the negative emotions (by consciously suppressing them) can lead to a number of physical health problems, the same is not true for regulating the negative emotions using cognitive strategies. For example, Beck, Rush, Shaw, and Emery (1979) and Seligman (1991) have argued that cognitive strategies may be used to prevent or alleviate depression. From this perspective, the cognitive regulation of emotion is assumed to have beneficial effect on health whereas the dysregulation or dysfunctional regulation of emotion (e.g., emotion suppression) might give rise to a number of physical and psychological health problems. Emotion dysregulation, for instance, has been found to be associated with such mental health problems as binge eating (e.g., Leahey, Crowther, and Irwin, 2008; Whiteside, Chen, Neighbors, Hunter, Lo, and Larimer, 2007), alcohol and other substance abuse (e.g., Cooper, Frone, Russell, and Mudar, 1995; Fox, Axelrod, Paliwal, Sleeper, and Sinha, 2007; Fox, Hong, and Sinha, 2008; Sayette, 1993) along with anxiety and the mood disorders (e.g., Campbell-Sills, Barlow, Brown, & Hofmann, 2006; Beck, Rush, Shaw, & Emory, 1979; Tull, Stipelman, Salters-Pedneault, and Gratz, 2009).

Taken together, the studies linking emotion regulation to health suggest that it might have beneficial or harmful effect on health depending on the strategy used to regulate emotions and/or success (or failure) at regulating emotion. If the emotions are regulated by suppression of experience and expression then it is likely to deteriorate health whereas the attempt to regulate the emotional experience and expression by cognitively restructuring or positively reappraising the emotion-arousing situation might lead to beneficial effect on health. Similarly, the inability to regulate emotions or dysfunctional regulation of emotion may also lead to exacerbation of health problems. As far as the mechanism of action is concerned, there is still a striking gap in the literature and one possibility that has been extended is through tonic autonomic arousal.

Disclosure and social sharing of emotions and health:

The preceding section reviewed evidences indicating the adverse effect of emotion suppression on health. If emotion suppression leads to poor health, then as a corollary it can be postulated that emotional expression (disclosure) will be associated with better health and well-being. Contrarily, non-disclosure or concealment of emotion will have an adverse effect on health similar to that of emotion suppression. During the past few decades, researchers have made attempt to test this hypothesis by examining the effect
of emotional disclosure and/or concealment (both written and oral) on health.

For example, Cole, Kemeny, Taylor, and Visscher (1996) observed that gay men who hide their homosexual status are more likely to suffer from major illnesses such as cancer if they are HIV-negative and to die more quickly from AIDS if they are HIV-positive than men who are more open about their homosexuality. Similarly, in a study of college students Pennebaker and Susman (1988) found that inhibition of verbal expression of traumatic experiences was associated with a variety of health problems. On the other hand talking about the traumatic experience has been linked with better health followed by reduction in the traumatic experience. For example, researchers have noted that if bereaved individuals are able to talk more about their spouses’ death, the healthier they are in the year following the death (Pennebaker and O’Heeron, 1984).

Numerous empirical studies demonstrate that emotional disclosure has been effective in promoting better overall health in addition to better adjustment to traumatic situations (Cameron and Nicholls, 1998, Pennebaker, Barger, and Tiebout, 1989; Pennebaker and O’Heeron, 1984; Pennebaker and Beall, 1986; Pennebaker, Kiecolt-Glaser and Glaser, 1988; King and Miner, 2000). Emotional disclosure has also been found associated with improved immune system function in terms of enhanced T-helper cell activity (Pennebaker, Kiecolt-Glaser, and Glaser, 1988) and other parameters of better immune competence (Esterling, Antoni, Fletcher, Margulies, and Schniederman, 1994; Petrie, Booth, Pennebaker, Davison, and Thomas, 1995). Furthermore, studies demonstrate that emotional disclosure has a beneficial effect on psychological functioning and mental health as well. For example, some studies report that emotional disclosure improved psychological functioning in rheumatoid arthritis patients (Kelly, Lumley, and Leisen, 1997). Similarly, there are empirical evidences, which suggest that disclosure or sharing of emotions lead to fewer self-report symptoms or health problems (Greenberg and Stone; 1992; Pennebaker and Beall, 1986; Pennebaker, Barger, and Tiebout, 1989).

To sum up, the preceding two sections bring to fore the role effortful suppression and/or disclosure of emotion and emotional experiences on health. The former has been demonstrated to exert negative influence on health by increasing chance of developing various types of health problems whereas the latter helps to reduce the adverse influence of negative and traumatic emotional experiences on health along with decreasing the likelihood of symptomatic complaints and health problems. Thus, it appears that social sharing or disclosure of negative emotional experience may be considered as specific action oriented strategy in regulating emotions. However, this action-oriented approach of regulating emotion by sharing and disclosing emotions has not been included in operationalization of the construct of emotion regulation. Attempts to measure emotion have largely focused on the cognitive strategies of regulating emotion and/or the conscious effort to inhibit or suppress emotions. Sharing or disclosure of emotions may appear as a behavioural component of emotion regulation that has a beneficial effect on health. However, this speculation needs further psychometric verification.

**Emotional Intelligence and health:**

Emotional intelligence (EI) involves an interaction between emotion and cognition in such a way that it leads to adaptive functioning (e.g., Salovey and Grewal, 2005). In conceptualization of emotion intelligence, though, there exists a lot of variation, the four branch ability model of Mayer and Salovey (1997) has received greater scientific acceptability. The four-branch model of emotional intelligence (Mayer, Salovey, and Caruso, 2004) posits that emotional intelligence involves a set of interrelated abilities such as, perception of emotion in the self and others, using emotion to facilitate decision making, understanding emotion, and regulating emotion in the self and others. However, there are alternative models of EI also that include non-ability factors such as motivational dispositions, general mood and global personal and social functioning along with some cognitive aspects (e.g. Bar –On, 1997; Goleman, 1995). Such models of EI are often labelled as mixed model of EI (Mayer, Salovey and Caruso, 2000). Attempt to relate EI with health has been made from both the perspectives – the ability and the non-ability perspectives. In the following sections, we present a brief overview of the major findings relating EI with health.

Associations between EI and health/well-being indicators are relatively consistent across studies using performance and self-report measures (Schutte, Malouff, Thorsteinsson, Bhullar, and Rooke, 2007). EI has been found to be positively correlated with measures of psychological well-being such as life satisfaction and happiness, while associations with measures of depression, stress and loneliness have been found to be negative (Austin, Saklofske, and Egan, 2005; Dawda and Hart, 2000; Day, Therrien, and Carroll, 2005; Palmer, Donaldson, and Stough,
Positive associations of EI with higher levels of self-rated physical health have also been reported (Tsaoousis and Nikolaou, 2005).

Further, the available empirical evidences suggest that high EI individual are less likely to be involved in health compromising behaviour whereas those with low EI are prone to engage themselves in health compromising or damaging behaviour. For example, several studies indicated an association of EI with reduced tendency to smoking and alcohol consumption (Austin et al., 2005; Trinidad and Johnson, 2002; Tsaoousis and Nikolaou, 2005) and with better self-capability for mood regulation in high-EI individuals (Thayer, 1996). Similarly, Pau and colleagues (Pau, Croucher, Sohanpal, Muirhead, and Seymour, 2004) reported that low EI students were more likely to engage in health-damaging behaviours. Some preliminary evidences indicate that high EI is related with adaptive coping, and an EI/coping composite has been found to mediate the association between personality and health behaviours (Saklofske et al., 2007).

People with higher EI are thought to possess a greater capacity to perceive and reason around emotion, which facilitates greater positive affect and happiness (Mayer and Salovey, 1997; Salovey and Mayer, 1990; Salovey et al., 1999). Although there is some controversy regarding EI’s discriminant validity, researches support EI’s utility for reducing stress and promoting health (Ciarrochi, Chan, and Caputi, 2000; Ciarrochi, Deane, and Anderson, 2002; Gannon and Ranzijn, 2005; Schutte et al., 1998). Further, with emerging evidences that EI can be taught and developed (Reshmi, 2006; Slaski and Cartwright, 2002; Caruso & Wolfe, 2001), exploration of EI–health relationship has become a topic of applied interest. Accumulating body of empirical evidences have demonstrated EI as a significant positive predictor of well-being (Austin et al., 2005; Bar-On, 2005; Ciarrochi and Scott, 2006; Ciarrochi et al., 2000; Gannon and Ranzijn, 2005; Gignac, 2006; Palmer, Donaldson, and Stough, 2002; Saklofske, Austin, and Minski, 2003). Higher emotional intelligence has also been linked with aspects of better psychosocial functioning (e.g., Brown & Schutte, 2006; Salovey and Grewal, 2005; Schutte et al., 1998; Schutte et al., 2001), including intrapersonal factors such as greater optimism and interpersonal factors such as better social relationships. Some of these psychosocial factors, such as more social support and more satisfaction with social support observed among individuals with higher emotional intelligence (Brown and Schutte, 2006), may serve as buffers to physical illness.

Efforts have also been made to explore the effect of various dimensions of the multidimensional construct of EI on health For example, ability for emotional repair was found to be positively related with perceived physical and mental health (Extremera & Fernandez-Berrocal, 2002; Mikolajczak et al., 2006), work satisfaction (Berrios et al., 2006) and life satisfaction (Augusto et al., 2006a, b). Similarly, some studies have examined the effect of ‘attention to emotions’ and ‘emotional clarity’ (the components of emotion perception) on health. For example, it has been observed that people who score high on ‘Attention to Emotions’ report more physical symptoms, depression and anxiety (Salovey et al., 2002) than individuals who obtain a low score in this factor. On the other hand, high scores on Clarity and Emotional Repair are related to lower anxiety and depressive symptoms and higher life satisfaction (Augusto Landa et al., 2008).

The role of EI in understanding mental disorders has also been examined. For example, Matthews, Zeidner, and Roberts (2002) pointed out that level of emotional intelligence might have implications for both mental disorders in which emotion plays a central role as well as disorders that relate to non-emotional features of emotional intelligence. Mood and anxiety disorders are examples of disorders that have maladaptive emotional state as core symptoms (Matthews et al., 2002). The better perception, understanding, and management of emotion (indicator of higher emotional intelligence) may prevent development of maladaptive emotional states associated with mood and anxiety disorders (Matthews et al., 2002). Research has shown that those with higher emotional intelligence do tend to have typically more positive mood and are better able to repair mood after a negative mood induction (Schutte, Malou, Simunek, Hollander, and McKenley, 2002). Similarly, Mathews and associates (2002) theoretically linked personality disorders and impulse control disorders with one component of EI-emotional awareness. They argued, that lack of awareness of emotion and inability to manage emotions are key symptoms in some personality disorders and impulse control disorders (Matthews et al., 2002) and thus lower EI (low emotional awareness) may be linked with these disorders.

The stress preventive and health enhancing function of EI has been demonstrated not only in the personal life but also at work place. For example, in a study Augusto Landa and associates (2008) examined the...
relationship between EI, stress and health among nurses. Their study shows a clear effect of the dimensions of EI on stress and health in the sense that EI emerges as a protective factor against stress and a facilitative factor for health (especially the Clarity and Repair dimensions) in a specific group of workers: nurses. Similarly, Oginski-Bulik (2005) has also suggested that the ability to effectively deal with emotions and emotional information in the workplace assists employees in coping with occupational stress.

Despite these empirical grounds for predicting that higher emotional intelligence would be related to better mental health, under certain circumstances higher emotional intelligence may have maladaptive consequences. For example, Petrides and Furnham (2003) found that individuals with higher emotional intelligence reacted more strongly to mood induction procedures, including a negative induction. Such greater sensitivity to mood-related stimuli might for some individuals lead to greater distress under adverse circumstances. Similarly, Gohm and associates (2005) observed that emotional intelligence is potentially helpful in reducing stress for some individuals, but unnecessary or irrelevant for others. They reported that the confused participants having average emotional intelligence were found to be highly stressed. Such participants despite having the emotional intelligence do not get benefit from it presumably because they lack confidence in their emotional ability and therefore do not appear to use it.

In spite of these caveats, the available empirical evidences, on the average, favour the hypothesis that high EI helps to reduce stress experiences and promote health. For example, a recent meta-analysis (Schutt et al., 2007) of 44 effect sizes based on the responses of 7898 participants reports that higher emotional intelligence was associated with better health.

The foregoing review clearly demonstrates that high EI works as protective factor against stress and ill health. However, the question remains that how and by what mechanisms the EI help to reduce stress experience and promote health. Several hypotheses have been forwarded to explain the observed EI—stress and EI-health relationship. Findings of some studies suggest that high EI enhances the inner resources to cope with stress and its adverse effect and thereby lead to better health. For example, Mikolajczak and associates (2008) found that high trait EI individuals’ choice of adaptive strategies to down-regulate various negative emotions and maintain positive ones explained their decreased propensity to experience these negative emotions and their increased propensity to experience positive ones. Enhanced positive emotional experiences have been reported to protect the individuals from the maladaptive neural, endocrine, and immune responses to chronic stress that can lead to disease (Epel et al., 1998; McEwen, 1998). Further, such positive experiences also broaden the individual’s attentional focus and behavioural repertoire and consequently build social, intellectual, and physical resources—resources that depletes under chronically stressful conditions (Fredrickson, 1998).

The hypothesis that emotional intelligence equips the individuals with better coping strategies and thereby helps them to combat with stress and its ill effects is also supported by recent empirical findings. For example, in a recent study Mikolajczak and Luminet (2008) observed that high trait EI individuals exhibited greater self-efficacy to cope and they appraised the situation as a challenge rather than a threat. Similarly, Ciarrochi and associates (2002) observed that people with high EI are able to deal with environmental demands better than people who score low on this variable.

Another mechanism, through which the EI may have its stress preventive and health promotive function, is the mobilization of social resources and enhancement of psychosocial functioning. Higher emotional intelligence is linked with aspects of better psychosocial functioning by several researchers (e.g., Brown & Schutte, 2006; Salovey and Grewal, 2005; Schutte et al., 1998; Schutte et al., 2001), including intrapersonal factors such as greater optimism and interpersonal factors such as better social relationships. Some of these psychosocial factors, such as more social support and more satisfaction with social support for those with higher emotional intelligence (Brown & Schutte, 2006), may serve as buffers to physical illness. Further, those with higher emotional intelligence might be better able to follow through on commitments to health behaviour and show better medical compliance. Several studies suggest that high EI is associated with greater social support network (Austin et al, 2004) which in turn may help to buffer the negative effect of stress.

To sum up, the preceding review brings to fore that emotional intelligence and its various components, in general, have beneficial effect on health and being. However, certain components, such as attention to emotion or ability to perceive emotion may have negative influence on health. Further, it also evident from the preceding review that EI may exert...
positive influence on health by number of mediating mechanisms such as enhancing the coping and adaptive resources, enhancing immune competence etc. However, further research is needed to explore the mechanisms through which EI influences the health status of an individual.

Alexithymia and health:

Alexithymia refers to a relative narrowing in emotional functioning. The salient clinical features of alexithymia include difficulties in recognizing and verbalizing feelings, endless descriptions of physical symptoms instead of emotions, concrete speech and thought closely tied to external events, paucity of fantasy life (Taylor, 1984, 1994).

Although initially described in the context of psychosomatic illness, alexithymic characteristics may be observed in patients with a wide range of medical and psychiatric disorders. A growing body of literature suggests that alexithymia is associated with a variety of physical and mental health complaints (Taylor, 1984). Recent reviews done by Lumley and associates (Lumley, 2004; Lumley, Neely, and Burger, 2007) suggest that alexithymia is a potential risk factor for symptoms and illness behaviour. These reviews also indicated that alexithymic patients may respond poorly to psychological treatments and presence of alexithymia interferes with or attenuates the health benefit of emotional disclosure. They have also observed that alexithymia is associated with heightened physiological arousal, the tendency to notice and report physical symptoms, and unhealthy compulsive behaviours (Lumley et al. 2007).

Alexithymia has been found to be associated with various mental disorders including anxiety and depression. For example, Berthoz, Consoli, Perez-Diaz and Jouvent (1999) found a positive correlations between depression, anxiety (state and trait) and alexithymia scores. Partial correlations revealed a tight link between trait anxiety and alexithymia. Similarly, Devine, Stewart and Watt (1999) observed elevated level of alexithymia in a group of high anxiety sensitive participants. Similarly, Honkalampi, Hintikka, Tanskanen, Lehtonen and Viinamaki (2000) have reported a high prevalence rate of alexithymia (32.1%) among participants having elevated depression score on Beck Depression Inventory.

Further, alexithymia has been found to be associated not only with physical and mental health complaints but also with elevated maladaptive and health compromising behaviour, which in turn adds to the risk for ill health of alexithymics. For example, in a study Helmers and Mente (1999) observed an association between alexithymia and maladaptive health behaviours. Findings indicated that: (1) the alexithymia and one of its component- difficulty identifying feelings was associated with poor nutritional consumption; (2) difficulty identifying feelings was also associated with greater alcohol and drug use; and (3) difficulty communicating feelings was associated with a more sedentary lifestyle. Overall, the findings of this study suggest that difficulties with identifying emotions and communicating emotions are associated with maladaptive nutritional habits, a sedentary lifestyle, and substance abuse.

The preceding empirical evidences clearly suggest that alexithymia has negative influence on the health status of an individual and may lead to a variety of physical and mental health problems. However, the mechanisms that link alexithymia with poor physical and/or mental health has not been clear yet. Several hypotheses have been extended to explain this relationship.

One hypothesis extended to explain the link between alexithymia and psychosomatic illness suggests that the alexithymic’s trait like deficit in identification and understanding of emotions associated with a deficit to express emotions amounts to emotion suppression. Health enhancing effect of emotional disclosure and health deteriorating effect of non-expression or suppression of emotion has been widely documented (see emotion regulation and health section of this paper for details). For example, Pennebaker (1993) reviewed researches dealing with the role of spontaneous and habitual disclosure of emotion and health and suggested that emotional disclosure in general have a positive effect and emotion suppression has a negative effect on health. He argued that the spontaneous nonverbal expression of emotion is related to immediate reductions in autonomic nervous system activity. Similar changes in specific autonomic channels occur when individuals are encouraged to express verbally their emotions. Indeed, these physiological changes are most likely to occur among individuals who are either verbally or nonverbally highly expressive. These data suggest that when individuals must actively inhibit emotional expression, they are at increased risk for a variety of health problems. He cited several experiments that indicate that verbally expressing traumatic experiences by writing or talking improves physical health, enhances immune function, and is associated with fewer medical visits. Thus, the non-expression of emotion due to poor understanding leads to tonic hyper-arousal of autonomic system, which in turn
Such as enthusiasm, alertness, joy etc. The high trait PA individuals are characterized by the disposition to experience a range of positive emotions such as anxiety and depression whereas the negative affect (NA) reflects the level of subjective distress and unpleasurable engagement. High trait NA individuals are characterized by the tendency to experience a range of distressing negative emotions such as anxiety and depression whereas the high trait PA individuals are characterized by the disposition to experience a range of positive emotions such as enthusiasm, alertness, joy etc.

Researches dealing with the role of trait PA and NA in health have in general noted that the former works as a health promotive and protective factor while the latter leads to a number of physical and mental health problems. For example, several researchers noted that NA was found to be associated with complaints of physical symptoms but it was unrelated to subjective physical illness (Costa and McCrae, 1987; Van Hemert, Bakker, Vandenbrouke, and Valkenburg, 1993; Watson and Pennebaker, 1989). Similarly, researchers examining the role of negative affect in self-report of illness have noted that individuals scoring high on NA reported two to three times as many physical symptoms as compared to individuals low on NA (Costa and McCrae, 1980). Recently, Hu and Gruber (2008) also observed that individuals low on NA and high on PA were found to have lower levels of symptoms of distress and depression, higher daily activity scores, and higher perceived physical and mental health-related quality of life. Thus, such empirical evidences suggest that high trait NA is associated with poor health whereas low trait NA is associated with better health.

Factor analytic studies have also reported that negative affect may be a common factor associated with various psychiatric illnesses. Such studies (e.g., Brown, Chorpita, & Barlow, 1998; Mineka, Watson, and Clark, 1998; Mineka, Watson, and Barlow, 1996) have demonstrated that negative affect reflects a higher order factor (i.e. variance common to all psychiatric diagnoses) and each psychiatric disorder a second order factor (i.e. variance unique to that disorder alone).

Positive, negative affect and health:

The positive affect (PA) reflects the pleasurable engagement and subjective experience of happiness whereas the negative affect (NA) reflects the level of subjective distress and unpleasurable engagement. High trait NA individuals are characterized by the tendency to experience a range of distressing negative emotions such as anxiety and depression whereas the high trait PA individuals are characterized by the disposition to experience a range of positive emotions such as enthusiasm, alertness, joy etc.
negative affect suggest that positive affect would be maladaptive in the context of chronic stress because it would counteract the adaptive attentional and motivational effects of negative affect and thereby will reduce the coping and adaptive efforts.

There have been a number of explanations proposed for the relationship between NA and symptom reports. Empirical evidences suggest that in healthy individuals, high NA may lead to an increased scanning for symptoms and an increase in the negative interpretations of common symptoms (Affleck, Tennen, Urrows, and Higgins, 1992; Watson and Pennebaker, 1989). Similarly, in patients with diagnosed illness, the NA has been found to increase watchfulness to symptoms and accordingly the patient sees symptoms as illness-relevant (Cameron, 1997). These empirical evidences extend the hypothesis that negative affect is associated with symptom reporting and perceived somatic complaints because of the cognitive biases (such as scanning, attention focusing etc.) introduced by the NA.

Contrary to the effect of NA on health, the positive affective experience has been described to have beneficial effect on health. Positive affective experience, in fact, is considered as an important component of mental health (e.g., Jahoda, 1958; Taylor and Brown, 1988) and it would not be surprising to find that happy individuals are more mentally healthy than their less happy counterparts are. Diener and Seligman (2002) reported that their happiest group of people had few symptoms of psychopathology, such as depression, hypochondriasis, or schizophrenia (see also Chang and Farrehi, 2001; Lu and Shih, 1997; Phillips, 1967).

Researches demonstrate that positive affect is associated with fewer unpleasant physical symptoms (Kehn, 1995; Mroczek and Spiro, 2005; Roysamb, Tambs, Reichborn-Kjennerud, Neale, and Harris, 2003). Individuals high in trait positive affect have been found to be at lower risk for various types of psychopathology such as, depression (e.g., Diener and Seligman, 2002; Lyubomirsky et al., 2005), social phobia or anxiety (Kashdan and Roberts, 2004), and hypochondriasis, or schizophrenia (see also Chang and Farrehi, 2001; Lu and Shih, 1997; Phillips, 1967). As the absence of positive affect has been argued to be a distinguishing characteristic of depression (Clark, Watson and Mineka, 1994; Watson & Clark, 1995), individuals high in trait positive affect are, of course, less likely to suffer from this debilitating condition (e.g., Lyubomirsky et al., 2005), as well as from social phobia or anxiety (Kashdan and Roberts, 2004).

The preponderance of positive emotional experience not only reduces the risk of physical and mental health problems but it also reduces the chance of engaging in health compromising behaviours such as drug abuse, alcoholism, smoking etc. For example, researchers suggest that positive mood is related to a lower probability of drug use (Lyubomirsky and King, 2005). Thus, not surprisingly, happy individuals are less likely to report a history of substance abuse (Bogner, Corrigan, Mysiw, Clinchot, and Fugate, 2001). Contrary to it, lowered positive affect may lead to problem behaviours such as engagement in delinquent activity (Windle, 2000).

Apart from enhancing the health and reducing the likelihood of health compromising behaviour, the positive emotional experience has been found to work as a protective factor in face of illness and other adversities of life. Positive affect, for instance, has been shown to relate to quality of life in cancer patients over the course of their illnesses (Collins, Hanson, Mulhern and Padberg, 1992) and to smaller allergic reactions among healthy students (Laidlaw, Booth and Large, 1996). In a study of individuals with sickle cell disease, positive mood was associated with fewer emergency room and hospital visits, fewer calls to the doctor, less medication use, and fewer work absences (Gil et al., 2004). Several other researchers have reported similar beneficial effect of positive affect in illness. For instance, in a study of AIDS-related care giving, Moskowitz, Acree, and Folkman (1998) observed that positive affect helps prevent clinical depression.

Positive affect may also serve as a buffer against adverse physiological consequences of stress. Positive affect, for example, has been shown to offset the potentially damaging physiological concomitants of negative affect. Fredrickson and Levenson (1998) induced negative emotion in participants by showing them a film that elicited fear. Participants were then shown one of four films designed to elicit contentment, amusement, sadness, or no emotion (neutral condition). Measures of cardiovascular reactivity indicated that those individuals who were shown the contentment or amusement film had faster recovery to baseline than did participants shown the sad or neutral film.

Attempts to explain the link between positive affect and health have generated several hypotheses that can be clubbed into two broad categories: 1) by enhancing and/or optimizing the functioning of the biological system (such as immune competence, endocrinal balance etc) and 2) by enhancing the psychosocial resources.
Under the first category of explanation, several psychobiological routes have been proposed. For example, one route through which positive affect has been hypothesized to offset the deleterious physiological effects of stress is through the neuro-endocrine system. Suggestive preliminary data come from a study by Epel, McEwen, and Ickovics (1998) in which women who reported finding positive meaning in response to a traumatic event had more adaptive hormonal responses to a subsequent laboratory stressor. The women’s positive affect because of meaning-based coping in response to traumatic events may have made them more physiologically resilient in the face of subsequent stress and may have helped protect them from the maladaptive neural, endocrine, and immune responses to chronic stress that can lead to disease (Epel et al., 1998; McEwen, 1998). The possibility that positive affect may have a role in the prevention of adverse physiological effects of stress is further reinforced by findings that positive and negative affect are associated with different neural structures (Ca-cioppo and Gardner, 1999; Davidson, 1992; LeDoux, 1995; Tomarken and Keener, 1998).

The second broad category of explanation linking positive affect with better health is based on the assumption that such emotional experiences help to generate greater psychosocial resources to cope with adversities of life. One such theory that has gained wide popularity in the area of positive affect research is the broaden-and-build model of Fredrickson (1998). Fredrickson reviewed evidences showing that positive emotions broaden the individual’s attentional focus and behavioural repertoire and consequently build social, intellectual, and physical resources—resources that generally depletes under chronically stressful conditions. Empirical evidence for the function of positive affect has begun to accumulate. For example, in a number of studies Isen and colleagues (Isen and Daubman, 1984; Isen, Daubman, and Nowicki, 1987; Isen and Geva, 1987; Isen, Johnson, Mertz and Robin-son, 1985) have shown that positive affect promotes creativity and flexibility in thinking and problem solving. Positive affect also facilitates the processing of important (e.g., self-relevant) information even if that information is negative and may potentially damage self-esteem (Reed and Aspinwall, 1998; Trope and Neter, 1994; Trope and Pomerantz, 1998).

Briefly, the foregoing review suggests that the tendency to experience negative emotions has an adverse effect on the health whereas the disposition to experience positive emotions enhances the health and works as a protective factor against development of ill health. However, the mechanism through which the NA and PA relates with health are different. The NA impairs health by cognitively biasing the individual to focus more on the symptoms and negative aspects of life whereas the PA enhances health by broadening the coping resources and enhancing and/or optimizing the biological functioning of the individual.

**Affect intensity and health:**

Affect intensity (AI) is another affect related disposition that has recently been linked with health and well-being. Affect intensity refers to the degree to which individuals experience the strength of emotions. It is a stable dimension of personality the tendency to experience extreme emotions pertains to all emotions, regardless of content or hedonic tone (Larsen and Diener, 1987). Individuals high in affect intensity are theorized to exhibit stronger emotional responses than individuals low in affect intensity. The empirical observations that individuals high in affect intensity rate their emotions as greater in magnitude as compared to those who are low, regardless of the severity or hedonic tone of those events (Flett, Boase, McAndrews, Pliner, & Blankstein, 1986; Larsen, Diener and Emmons, 1986), support the said conceptualization of AI.

The aforesaid theoretical formulation that individuals high on AI are likely to experience extremes of emotions leads to the speculation that high affect intensity individuals will also experience intense stress and therefore would likely to suffer from more health problems. During the last two decades, some empirical evidences have been accumulated to support the said speculation. For instance, Larsen and Diener (1987) reported that greater affect intensity is associated with greater somatic symptoms and neurotic symptoms. Similarly, Williams (1989) also reported a significant positive relation between affect intensity and neuroticism. Other researchers have also demonstrated the relationship between affect intensity and somatic disturbances, such as nauseas, headaches, muscle soreness, shortness of breath (e.g., Salovey, Detweiler, Steward and Bedell, 2001). The high AI individuals have been found to report a number of somatic problems (e.g., Diener, 1984; Larsen and Diener, 1987) and symptoms of mental ill health such as depression in addition to other problem behaviours (Silk, Steinberg and Morris, 2003).

The preceding review extends the hypothesis that the experienced intensity of emotion irrespective of the valence of emotions (positive versus negative) has significant influence on the health status of an individual. Greater intensity of the perceived or
experienced emotion may have deleterious effect on health and the moderate intensity of experienced emotions, either positive or negative, may help to promote health. For example, Mayne (1999) argued, "short bursts of emotion-associated sympathetic activation can stimulate parts of the immune system, whereas more chronic activation can cause "wear and tear" on the cardiovascular system. Anxiety and guilt have been associated with preventive health behaviours and care seeking, whereas distress and depression increase symptom sensitivity, accuracy of illness perception, and can facilitate care seeking and receipt of support. However, intense and chronic negative affects may lead individuals to engage in risky health behaviours, such as substance abuse, overeating, and high-risk sex, as a coping mechanism to regulate negative emotion. They may also undermine social support systems, leading to a self-perpetuating cycle of conflict and isolation" (Cited from abstract). The observations of Mayne (1999) suggest that negative emotional experiences, thought to exert harmful effect on health, are not always damaging for one's health. According to Mayne, it is not the valence of emotion (positive or negative) per se, rather it is the intensity of the experienced emotion that determines whether it would exert a beneficial or harmful effect on health.

The preceding review, thus, suggest that high affect intensity is associated with somatic problems and symptoms of mental illness, and its effect on health is independent of the valence of the experienced emotions. Further, the review also suggests that high AI is associated with such factors that may predispose an individual for developing health problems. For example, it has been noted by several researchers that high affect intensity may predispose to substance abuse and addiction (Thorberg and Lyvers, 2006), suicidal ideation (Lynch, Cheavens, Morse and Rosenthal, 2004). Similarly, high AI has been linked with a variety of phenomena that may lead to depression, such as negative cognitive operations (Larsen et al., 1987), self-consciousness (Flett et al., 1986a), and dysfunctional attitudes (Dance, Kuiper and Martin, 1990). Therefore, the available research findings suggest that high AI may directly impair the health of an individual as well as it can influence the onset and progression of health problems by leading an individual to health compromising behaviours such as drug abuse that in turn may increase the risk for physical and mental health problems.

Conclusion:
The major objective of the present paper was to present an overview of the current trends in relating emotion with health. In an attempt to address the objective we focused on some affect related abilities and dispositions that may influence health.

The review indicates that the ability to regulate one's emotions by cognitively reappraising the situation is such as way that it does not arouse emotion is beneficial as compared to the effortful attempt to inhibit or suppress the expression of emotion. The studies exploring the effect of social sharing of emotions suggest that disclosure of emotional experiences (particularly the negative ones) may be beneficial in adjusting with traumatic situation and improving health. The studies linking alexithymia with impaired health also indirectly substantiate the findings that non-expression of emotion may lead to poor health. Alexithymia is trait like affective deficit in which individual find difficulty in identifying and describing their feelings. Another affect related construct reviewed in the present paper is emotional intelligence that consists of a set of interrelated abilities to perceive, understand, regulate emotions and use emotions for one's personal growth. The review indicated that emotional intelligence and its components have in general a beneficial effect on health and such abilities equip the individual to cope with the adversities of life and protect one's health.

Review of findings dealing with the role of positive and negative emotional experiences (positive and negative affectivity) revealed that in general negative affect adversely influences the health of an individual. However, there are some studies, which suggest that negative affect may also serve some adaptive functions and it is not always harmful for the individual’s health. It is also evident from this review that the positive affect plays a protective role and is beneficial for promoting health and well-being. Thus, it can be concluded that the valence (positive versus negative) of emotional experience is differently related with health. Contrary to it, the studies dealing with relationship of affect intensity with health suggest that it is not the valence of emotion rather it is the intensity of the emotional experience that influences health. The tendency to experience emotions in greater intensity may have adverse effect on health irrespective of the emotional valence. Whereas even the negative emotions experienced in moderate magnitude may have beneficial effects (Mayne, 1999). To sum up, the present review suggests that there are some affect related traits and abilities that have beneficial effect on health whereas others may have adverse negative effect.

One thing which is apparent from the present review is that the most of the studies have examined the
role various affect related constructs on health independent of each other. However, given the interrelated nature of these affect related constructs it would be a better research strategy for future to examine the effect of these affect related variables on health in relation to each other. However, for research purpose we examine such constructs independently, in real life they co-occur. For example, individual high on EI is less likely to alexithymic and chances are high that he/she would not be disposed negative emotional experiences and would not exaggerate the feelings (affect intensity). Thus, it is very likely that such emotional constructs co-occurring together may modify the effects of each other on health and therefore it would be helpful to investigate their relationship with health in relation to each other. Such attempt would help to develop a more holistic affective theory or model of health.

One limitation of the present review is that we have sampled some representative studies in each of the previously mentioned areas of emotion-health relationship. Our attempt was to present a general trend existing in the present literature dealing with emotion-health relationship and therefore we do not claim that we have made exhaustive review of the literature in the concerned area. Further, we also do not claim that we have reviewed all the affect related constructs that may potentially relate with health. However, the affect related constructs reviewed in this paper are some examples of affect related variables, which have been widely studied and may be a focus of future research. Our observation is that the attempt to relate emotion with health from holistic perspective is a striking gap in the present literature and such attempt would definitely add to the existing body of knowledge.

References:


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