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**Effectiveness of positive insights for emotional wellbeing
and stress reduction: A four-week intervention in
participants experiencing Cultural Stress**

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SUMMARY

BACKGROUND: Positive emotions and stress-reduction have profound effects on overall wellbeing and physical health. Based on scientific findings from positive psychology, we have developed 11 positive insight cards that we expect to reduce stress and hence wellbeing.

OBJECTIVE: The present study aimed to assess the effect of a 4-week intervention using this novel battery of 11 positive insight cards on emotional wellbeing using physiological and subjective measures of stress.

METHODS: Forty healthy participants who reported having Cultural Stress were assessed at baseline on subjective (assessed by Perceived Stress Scale) and physiological (blood pressure, heart-rate and intracellular water) measures of stress. These measures were assessed again at week 4 following a stress reduction intervention, which required participants to focus on 11 positive insight cards on a daily basis.

RESULTS: Repeated measures t-tests revealed reduced stress as measured by the PSS at week 4 relative to baseline. Reductions in physiological measures of stress were also observed at week 4 relative to baseline for heart-rate. No significant differences between baseline and 4 weeks intervention were observed for blood pressure or intracellular water.

CONCLUSION: Our novel battery of insight cards showed improvements in subjective and physiological measures of stress as measured by the PSS and heart-rate. There was no effect on any other measures of physiological stress. Our novel stress intervention may be beneficial for reducing aspects psychological and physiological stress.

INTRODUCTION

Stress has been highlighted as a key risk factor in modern societies for the pathogenesis of aging related diseases (Gassen et al., 2017). For example, perceived stress (e.g. Parks et al., 2009; Puterman et al., 2010) and work-related stress (Ahola et al., 2012) are frequently associated with accelerated cellular aging. Moreover chronic, excessive and/or persistent stress, i.e. the cumulative load of day-to-day stresses are often cited as independent risk factors for a wide range of serious health problems including cardiovascular disease, stroke, depression, and autoimmune disorders (McEwen et al., 1998). Furthermore, longitudinal assessments of over 3000 adults have observed that chronic stress over a period of several years can have enduring negative impact on health outcomes 3-7 years later (Steptoe et al., 2005). Thus, stress is readily identifiable as an important risk factor for aging-related diseases (Gassen et al., 2017).

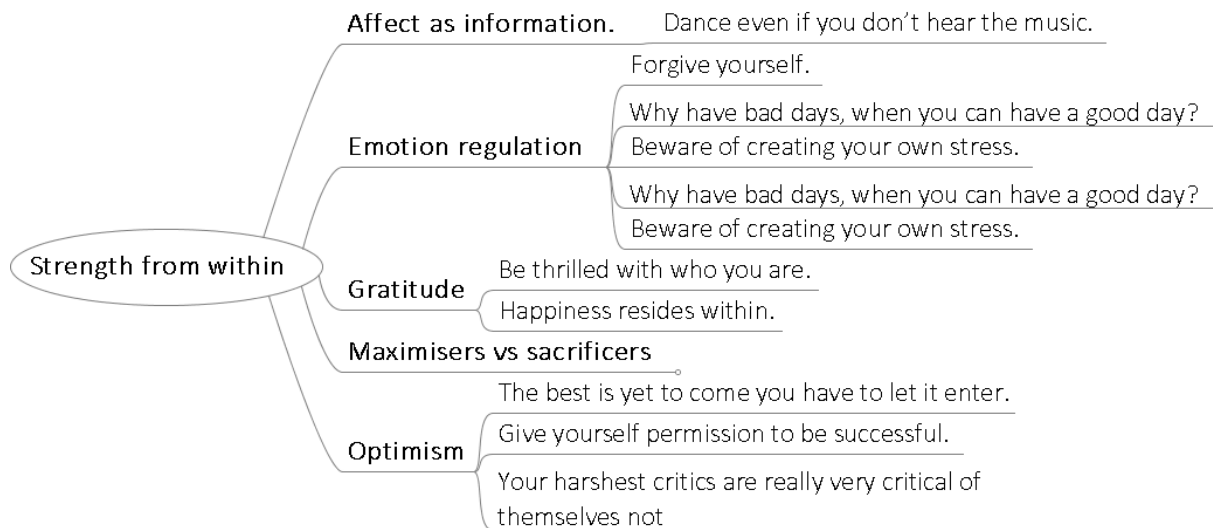
Beyond clinical pathologies and aging related disease, day-to-day stress, can have dramatic effects on one's wellbeing, psychological health, happiness, and overall quality of life (Godfrin & van Heeringen, 2010). An umbrella term for the combination of work-related, economic, technology invasive, and general life stresses which are superimposed onto day-to-day stresses has been coined 'Cultural Stress', (Murad, 2015). Examples of people who suffer significant Cultural Stress include many professionals in the developed world, who are 'on-line' or contactable by work 24 hours a day. It is not uncommon for professionals in the developed world to work upwards of 60 hours a week, as a result of pressure to achieve, or keep up with their contemporaries. Technological advances meaning, they are able to work anywhere, at any given time, and being contactable at all times.

Such is the ubiquitous impact of stress on psychological and physical health, many clinical fields have sought to produce stress reduction interventions, such as Mindfulness Based Stress Reduction (MBSR – Kabat-Zinn, 1982) and Mindfulness Based Cognitive Therapy (MBCT Segal et al., 2012). These mindfulness-based stress reduction interventions have been assessed in randomised control trials for their efficacy at improving a range of clinical outcomes, such as anxiety, depression, and chronic pain (for meta-analysis see Gu et al., 2015). Mindfulness techniques and meditation also show promising results for dealing with work-related stress (Klatt et al., 2009) and cognitive ageing (Gard et al., 2014).

Similarly, positive psychology, which pertains to the study of to the contribution of positive subjective experiences and individual traits to quality of life and pathology prevention (Seligman, 2002), has greatly progressed our understanding of the importance of emotional positivity for general health and wellbeing over the past 20 years. Seligman and Csikszentmihalyi (2014) describe the key contribution of positive psychology, as having achieved a shift in focus from pathology-driven models which ignore positive features, to models which foster happiness, by stressing the importance of hope, wisdom, creativity spirituality and additional features which make life enjoyable. Furthermore, positive psychology stresses the importance of hope and optimism for promoting physical health and mental wellbeing. The idea that feeling good, contributes to positive health outcomes, is corroborated by studies such as that by Kubzansky and Thurston (2007), who suggest that emotional vitality protects physiological wellbeing over time. Likewise, positive psychology has also identified personality traits that are associated with higher levels of wellbeing, such optimism (Alcorn et al., 2013) and satisficing (Schwartz, 2004).

Given the benefit of positive emotions and stress-reduction to overall wellbeing and physical health. Our aim was to develop a set of insight cards to facilitate stress reduction, based on the disciplines of positive psychology and mindfulness. These insights comprise 11 statements that relate to several factors in the psychology of emotion literature, including optimism (Alcorn et al., 2013), satisficing (Schwartz, 2004), emotion regulation (Kool, 2010), and gratitude (Wood et al, 2010), as well as items that related to affect as information (Glore et al., 2006) (Fig. 1).

Figure 1. Insight Cards and their relation to established areas of science.



It is hypothesized that following 4 weeks of using our positive insights daily, there will be significant reductions in subjective measures of perceived stress, as well and physiological measures of stress (heart-rate, blood pressure and intracellular water).

METHODS

Participants

A total of 40 participants (32 Female, mean age = 45.27±14.23, BMI = 24.33±4.35) which were recruited from the local area to the Murad Research Centre, in El Segundo California completed three office visits to the research facility. An initial visit, and a follow up visit at week 4. All participants self-identified as having Cultural Stress in their life and presented themselves as seeking to make positive changes in health/wellbeing and stress reduction/management. To be eligible for inclusion in the study, participants were required to be between 30 and 75 years of age, have normal or corrected to normal vision, and be able to read and write in English.

Exclusion criteria included the following: a) participants who are, or may be pregnant, have a pacemaker, or implanted defibrillator that could affect the ability to obtain body composition measurements with a RJL machine b) participants with a history of seizures.

Insight Cards

Subjects were given 11 of Dr Murad’s insight cards to be utilized throughout the study to promote emotional wellbeing and a reduction in Cultural Stress. Subjects were instructed to

focus on the insights a minimum of twice daily for 4 weeks and incorporate the cards into their daily routine. For example, this may include posting the Insight Cards at work in subject's personal space/office for convenient reflection, or keeping in a journal or purse, or near their bedside table. Research Participants were also asked to keep a daily journal throughout the study about how the Insight Cards have influenced their journey during the study. Insight Cards included the following 11 statements:

1. The best is yet to come you have to let it enter.
2. Give yourself permission to be successful.
3. Your harshest critics are really very critical of themselves not you.
4. Be imperfect live longer.
5. If it is no big deal don't make a big deal about it.
6. Forgive yourself.
7. Be thrilled with who you are.
8. Happiness resides within.
9. Why have bad days, when you can have a good day?
10. Beware of creating your own stress.
11. Dance even if you don't hear the music.

Insight cards were developed to affirm behaviours that are known to have positive wellbeing effects based on affective science and positive psychology. However, the cards did not suggest a specific solution. As such each participant will attribute different meanings to the cards.

Questionnaires

Cohen's Perceived Stress Scale (PSS) (Cohen et al., 1983): The PSS is a 14-item scale which assesses the degree to which events in one's life are appraised as stressful. Participants are required to rate, on a scale of 0 to 4 (0 = never, 4 = very often) how frequently in the last month participants have found themselves overloaded with stress. Scores range from 0-56, with a higher score being indicative of greater stress.

Biological assessments

Body Mass Index (BMI) and Intra-Cellular Water (ICW) were calculated using specialist body composition assessment technology (Quantum II BIA analyzer; RJL Systems), acquired using a 4-lead bioelectrical impedance as per the RJL testing protocol, which requires participants to lie flat on a stretcher whilst electrodes are placed on the participant's right hand and foot. This was conducted on the initial baseline assessment visit, and the follow up visit (week 4) of the study.

Procedure

On visit 1 (baseline/screening visit), upon entering the lab, participants signed an informed consent form, a Subject Bill of Rights and a Photography consent form. Following the consent process participants were given a health and eligibility screening, and demographic information was collected. Participants were then provided with a 5-minute explanation of Cultural Stress by the research manager at Murad Inc. Participants were also provided with an information leaflet about Cultural Stress to take home with them. Blood pressure and pulse was then taken for the participant from the left arm, whilst relaxed in a sitting position.

After removal of the blood pressure cuff, a questionnaire was administered. Participants were then provided with the 11 insight cards to use and focus on during the study and then completed baseline body composition assessments. Participants were also instructed to complete a daily journal (not analysed) for the duration of the study to ensure compliance with insight cards.

During the follow up visit (4 weeks later), participants completed questionnaire measures again, as well as the physiological and body composition measures. Participants also handed in their completed study journal to the researcher. At the end of the study, participants were thanked for their time, fully debriefed and provided with compensation for completing the study.

Data Analysis: All analysis was conducted in SPSS version 22. Subjective stress was assessed using a paired sample t-test with total score on the PSS as the independent variable, and time point (baseline vs. week 4) as the within-subject factor.

Physiological measures of stress were also assessed with a series of paired sample t-tests, whereby the outcome measure of stress (systolic blood pressure, diastolic blood pressure, pulse, and intracellular water) were the independent measures, and time point was the within-subject factor.

RESULTS

Mean scores for subjective and physiological outcome measures of stress displayed in table 1.

Table 1. Means and SDs for outcome measures of stress at baseline and week 4.

Measure	Baseline (SD)	Week 4 (SD)
PSS total score	19.75 (4.75)	17.64 (3.15)*
Heart-rate	75.15 (13.04)	72 (13.44)*
Systolic blood pressure	122.15 (17.33)	120.63 (15.69)
Diastolic blood pressure	78.48 (11.76)	77.35 (9.93)
ICW	26.35 (3.96)	26.58 (4.03)

* Difference is significant at the 0.05 level (2-tailed).

Subjective Stress

A paired samples t-test on total scores from the PSS at baseline and week 4, revealed a significant reduction of stress at week 4 of treatment compared to baseline ($t(35) = 2.14$, $p < .05$).

Physiological stress

A paired samples t-tests revealed that there was a significant reduction in heart-rate at week 4 relative to baseline ($t(39) = 2.60$, $p < .05$) and a non-significant trend towards increased ICW ($t(39) = -1.90$, $p = .07$). There were no significant differences in ICW, systolic or diastolic blood pressure between week 4 and baseline (all p 's $> .1$).

DISCUSSION

The aim of this study was to assess the impact of a 4-week intervention using our novel battery of 11 positive insight cards on emotional wellbeing using physiological and subjective

measures of stress. We observed a significant reduction in perceived stress at follow-up relative to baseline on the PSS. This suggests that the positive insight cards were useful for our population in successfully reducing their perceived stress (as measured by the PSS). This finding was further corroborated by a significant reduction in physiological stress, as measured by heart-rate following 4 weeks of reading the positive insight cards and to a lesser extent by non-significant trend towards increased ICW. This is tentative evidence that adhering to a positive psychology protocol whereby positive insights are read on a daily basis can improve physical signs of stress.

The novel insight cards assessed in this study is based upon the disciplines of positive psychology, and mindfulness, both of which have been observed to produce positive effects in terms of stress reduction (Klatt et al., 2009; Kubzansky and Thurston 2007). Our data corroborate the positive impact that short term interventions based on mindfulness and positive psychology can have on psychological and physiological measures of stress. Given that stress has been related to a plethora of health problems (McEwen et al., 1998), as well as implicated as a risk factor the pathogenesis of ageing related diseases (Gassen et al., 2017). It is plausible that stress reduction strategies such as ours could also have utility in cosmetic ageing. However, larger randomised controlled trials are necessary to investigate this further.

The present work has three limitations that warrant discussion. Firstly, the study did not include a control group. Secondly, there was no significant improvement on blood pressure, which is often associated with stress reduction. Thirdly, the included sample is a self-selecting sample who identified as having high Cultural Stress and hence effects need to be replicated in other groups.

Overall the current study serves as a validation of a novel self-help intervention for Cultural Stress reduction using an attention focus to positive insights paradigm. This intervention may be of benefit to people who suffer with high Cultural Stress, and future research with a mobile platform app may provide real-world application with a larger sample.

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