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Positive Stress in Companies

Keywords: positive stress, company culture, NLP, online reviews, social media analysis

Extended Abstract

Introduction The World Health Organization treats stress as the number one health threat in the U.S., with more than 60% of doctor visits being due to a stress-related issue [NBD+13]. According to the American Institute of Stress, 40% of workers consider their jobs to be stressful; a number that has significantly increased during the COVID-19 pandemic [Sug20]. Workplace stress is often linked to lower motivation, poor performance, and decline in employees' well-being [CC97], while it is estimated to amount to 190 billions in healthcare costs in the U.S. alone [Pal16].

However, lab studies on individuals suggest that not all stress is bad. There are two types of stress: *distress* refers to harmful stimuli, while *eustress* refers to healthy, euphoric stimuli that create a sense of fulfillment and achievement. Whether stress is positive or negative depends on how an individual reacts to a stressor [CSA13]: *'One's stress mindset can be conceptualized as the extent to which one holds the belief that stress has enhancing consequences for various stress-related outcomes such as performance and productivity, health and well-being, and learning and growth, or holds the belief that stress has debilitating consequences for those outcomes [CSA13]'*. Of prime importance is to distinguish appraisal from stress mindset. Stress mindset describes the evaluation of the nature of stress itself as positive or negative (i.e., enhancing or debilitating) [CSA13], whereas appraisal is about the evaluation of a particular stressor as more or less stressful [CKM83]. For example, one may appraise a difficult task as highly stressful and have a stress debilitating mindset, which, in turn, leads the individual to experience the situation as draining (negative stress). By contrast, another individual may again consider the task as highly stressful but have a stress enhancing mindset, leading the individual to experience the situation as an opportunity for growth and development (positive stress). While stress is often linked to depression [Ham05, Wan05], several accounts posit that certain stressful experiences may fundamentally change individuals for the better—a phenomenon referred to as stress-related growth [CSA13]. The experience of stress can enhance the development of mental toughness, greater appreciation for life, and an increased sense of meaningfulness [PH06, TC04]. In addition to an individual's mindset, the environment in which they are in can foster positive or negative stress experiences. For example, in the context of workplace, we posited that the company culture can have a significant impact on how the employees perceive and react to stress, and that this in turn can have an effect on company success.

For shedding light on this nuanced view of stress, telling the two types of stress apart is already challenging, let alone quantifying their impact across corporations.

Data and Methods By leveraging a dataset of 440K reviews about S&P 500 companies published during twelve successive years, we developed a deep learning framework to extract stress mentions from these reviews. We proposed a new methodology (Figure 1) that places each company on a stress-by-rating quadrant (based on its overall stress score and overall rating on the site), and accordingly scores the company to be, on average, either a *low stress*, *passive*, *negative stress*, or *positive stress* company.

Results We found that (former) employees of positive stress companies tended to describe high-growth and collaborative workplaces in their reviews, and that such companies' stock evaluations grew, on average, 1.97 times in 5 years (2014-2019) as opposed to the companies of the other three stress types that grew, on average, 1.47 times in the same time period (Figure 2). We also found that the four stress scores aggregated every year—from 2008 to 2020 — closely followed the unemployment rate in the U.S.: a year of positive stress (2008) was rapidly followed by several years of negative stress (2009-2015), which peaked during the Great Recession (2009-2011). These results suggest that automated analyses of the language used by employees on corporate social-networking tools offer yet another way of tracking workplace stress, allowing quantification of its impact on corporations.

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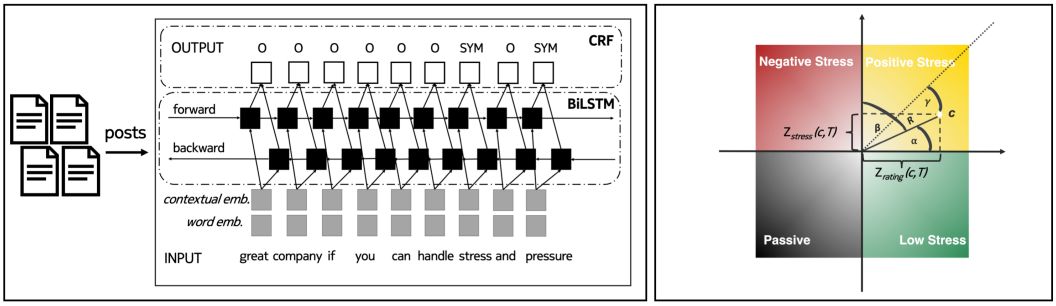

Figure 1: The overview of our methodology.

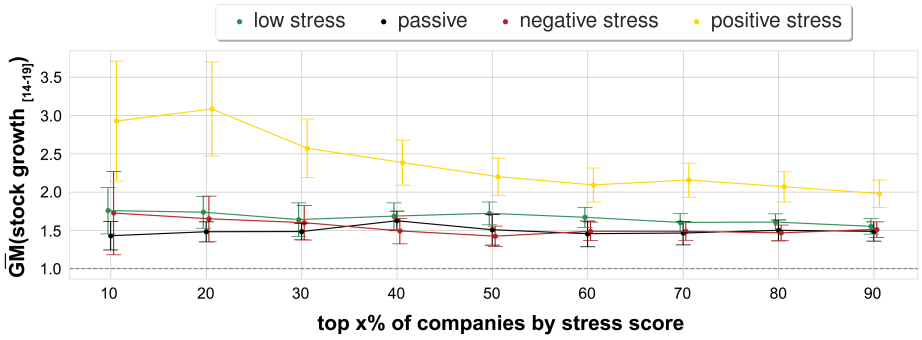

Figure 2: Geometric mean of the stock growth values $\bar{GM}(stock\_growth_{[09-19]})$ for increasing stress score percentiles for the companies of a given stress type. Error bars represent geometric standard error $GSE(stock\_growth_{[14-19]}) = \bar{GM}(stock\_growth_{[14-19]}) / \sqrt{N} \cdot \sigma(log(stock\_growth_{[14-19]}))$.