The Impact of Stress Levels on Ethicality for Employees

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This research seeks to fill a gap in the occupational stress literature by making a tentative step toward examining the extent to which stress is related to ethicality. A sample of 370 business employees at companies of various sizes were surveyed. The survey included twenty-two questions, was both age and gender-balanced, and well represented the U.S. We have examined the role of perceived stress on employees in organizations to understand the extent to which they may be conducive or debilitating to ethical conduct. As hypothesized, we find that stress is negatively related to ethics. In addition, we find a non-linear relationship such that high levels of stress result in negative ethicality while lower levels result in comparatively less negative ethicality.

Keywords: ethics, ethical conduct, stress, stress level

INTRODUCTION

The concept of workplace stress was originated by Harvard Medical School professor Walter B. Cannon in the 1930's (Cannon, 1932, 1935). In his research Cannon posited his homeostasis theory – a stress response occurs when an external, environmental challenge or demand disrupts the individual's steady state or homeostasis. These environmental demands or challenges trigger a primordial physical and emotional reaction to the situational demand that Cannon called a "fight or flight" response. The *Harvard Gazette* (2016) estimates that 36% of workers feel stress in the workplace and that work-related stress costs U.S. businesses $30 billion in lost workdays.

Pfeffer (2019) quoting a Centers for Disease Control study indicated that stress is the leading workplace health problem. Furthermore, Pfeffer (2018) in his book *Dying for a Paycheck*, states that 61% of employees said that workplace stress had made them sick, and 7% have said they had actually been hospitalized. He estimates that workplace stress costs U.S. employers more than $300 billion per year in associated costs

and may cause as many as 120,000 deaths. Pfeffer reports that in China it is estimated that one million people per year may be dying from overwork. Death by overwork is not a new concept. Brown, Lubove & Kwalwasser (1994) discuss the Japanese concept of "karoshi" or death by overwork, a phenomenon that was sweeping through Japanese management at that time.

This research seeks to fill a gap in the occupational stress literature by making a tentative step toward examining the extent to which "perceived" stress is related to ethicality. Further, we seek to explicate the extent to which varying levels of stress are differently related to ethicality. The remainder of the paper is organized as follows. The first section presents a brief review of the relevant literature. In the second section, we develop the hypotheses that are tested. The third section contains a description of the data and presents summary statistics. In the next section, we present our empirical results. The last section contains a summary and discussion of future research opportunities.

LITERATURE REVIEW

The origins of the concept of stress are credited to the seminal work of Walter B. Cannon (1932, 1935). Arguing the ancient biological origins of what Cannon termed the *stress response*, humans have a distinctive physical and emotional reaction to situational demands, called *stessors*. Cannon argued that all humans strive for a state of homeostasis in their experience of life and that the introduction of an external environmental challenge or demand disrupts the individual's steady state.

The relevance of these concepts for the contemporary workplace has been demonstrated by a number of authors. Podsakoff, Le Pine, and Le Pine (2007) have shown that stress from career dynamics has risen dramatically over the last several decades. Technological progress has played a part in this as workers are now technologically tethered to their work 24 hours a day, 7 days a week (see Brod, 1984, Weill and Rosen, 1997, or Brown, 2000). Furthermore, Brown (2005) has detailed the existence of ubiquitous risk in the modern workplace. The old psychological contract has been broken as work longevity has become more tenuous, contingent, and often short-term resulting in a change in how employees view the employee-employer relationship. Pool (2000) performed a study investigating the role of stressors and its impact on job tension. The findings of the study indicate that organizations with constructive cultures will significantly reduce role stressors decreasing job tension and increasing job satisfaction, job performance, and job commitment. This constructive culture is rooted in the organization's beliefs and philosophy about how it conducts its business.

Stress from career dynamics has risen dramatically over several decades (Podsakoff, LePine & LePine, 2007). As companies downsize, merge or acquire other companies, or respond to the fluctuations in the marketplace, employment had become more tenuous. As a result of this career dynamic, risk has become ubiquitous for workers creating a constant overlay of existential anxiety in the workplace. These new dynamics have caused the old psychological contract to be broken, causing worker longevity to become more tenuous, resulting in a change in how employees view the employee-employer relationship (Brown, 2005). Such perceptions of stress may also impact ethicality in the workplace.

Paterson and Huang (2018) studied the impact of leaders' ethical behaviors and their impact on followers' unethical behaviors. In a field study of 394 employees and 68 supervisors, the authors found that the leaders' behavior and ethical voice have a significant influence on role ambiguity and role ethicality and unethical conduct. Umphress and Bingham (2010) conducted a study the results of which indicate that employees will engage in unethical acts with the intent of benefitting the organization (or unethical pro-organizational behavior). The authors conclude that strong employee identification with the organization and an organizational climate that overlooks the moral content of unethical actions typify this phenomenon. Ness and Connelly (2017) examined multiple situational influences present in organizational ethical dilemmas. The situational influences studied included pressure to perform, interpersonal conflict on sense-making processes, and the likelihood of a consequence for unethical conduct (among others). The results suggest that decision ethicality is greater when individuals are recipients of consequences. In a study of 246 work units, Kangas et al. (2017) studied if the ethical climate of organizational culture is associated with sickness absence. Findings indicate that an ethical organizational climate plays a significant role enhancing

employee well-being as measured by sickness absence from work. The employee's supervisor's role in modeling behavior and demonstrating a willingness to discuss ethical dilemmas are important factors in preventing sickness absence related to ethical climate in organizations.

Korunka and Hoonaker (2014), Brod (1984), and Weill and Rosen (1997) all examine a source of workplace stress at the intersection of job performance and technology, termed "technostress". This technological mediation of work by information communication technology (ICT) has resulted in workers being technologically "tethered" to their jobs 24/7 resulting in higher levels of stress. This technostress overlays career and work/family balance stress with what some have called a technologically enhanced improvement on Jeremy Bentham's panopticon (Bentham, 2011). This constant visibility and technological control may lead to psychological and behavioral alterations by workers as described by Brown (2000). Tarafdar, Tu, Ragu-Nathan, and Ragu-Nathan (2007), in a study of the impact of ICT on workers, the authors' findings validate their hypotheses: 1) technostress is inversely related to individual productivity, 2) role stress is inversely related to individual productivity, and 3) technostress is directly related to role stress. Based on prior research, stress regardless of the source, is expected to have a negative association with ethicality.

Thus,

Hypothesis 1: *There is a negative relationship between stress and ethicality*

Pervin (1968) discusses how when individual and organizational characteristics match, job performance and job satisfaction tend to be high and job-related stress tends to be low. A lack of individual and organizational congruence leads to increased conflict, reduced job satisfaction, and lower performance. Similarly, in a study of ethical work climate and its relationship with role stress (among other factors studied), DeConnick (2010) found that ethical work climate directly influences workers' job attitudes, job behaviors, and perceived stress.

Both role ambiguity and role conflict can occur when workers are asked to perform work duties that do not comport with company policy or personal moral standards (Hammer, Bauer and Grandey, 2003; Peterson et al. 1995). The structure, organizational culture, and leadership style within the organization greatly effects employee perceptions, role ambiguity and role conflict leading to potential unethical behavior. Jurkiewicz and Giacalone (2016) conclude that the structure of the organization itself and the individual's placement within that structure predisposes whether the organizational environment is conducive or prohibitive to unethical acts.

The analysis and results of a survey of 121 marketing managers in Taiwan by Tsai and Shih (2005) provides support for a negative relationship between a firm's ethical culture and stress related to role conflict experienced by managers. Similarly, findings from a study of 915 employees conducted by Sert et al (2014) indicates there is a negative relationship between organizational justice and work-related stress. Additionally, an ethical organizational climate has a negative effect on work related stress. The authors conclude that employee work related stress can be decreased through the development of an ethical organizational climate and organizational justice initiatives.

Companies such as Johnson & Johnson, in recognition of the potential costs of stress, its impact on employee well-being and the negative consequences of stress induced unethical conduct, has instituted a corporate wellness program in an attempt to prevent or reduce the impact of workplace stress (Quick, 1999). In Fleisher, Brown, and Fleisher (1996), the authors outline a strategic human resource management approach to diagnose the internal and external organizational environments using a comprehensive wellness framework assessing intellectual, physical, spiritual, emotional, and occupational wellness. Zula (2014) found that smaller companies had less of an effort on wellness initiatives with only 6.1% of companies of 50-99 employees and 2.8% of companies with less than 50 employees reporting wellness efforts. In contrast, 34% of companies with 100-499 employees reported wellness efforts, and this dropped off to 17% for organizations with 500-999 employees and 1,000-2,499 employees. Only 11% of organizations with 2,500-4,999 and 5,000 or more both reported wellness initiatives. Hence in this particular study, a non-linear relationship was found between size and preventative measures.

In addition to preventive measures, a number of organizations institute programs designed to remediate the effects of corrosive workplace stress. Employee Assistance Programs (EAP) are designed to accomplish this. Employees may contact outside purveyors of counseling and medical services on a confidential basis to help remediate any dysfunctional coping with stress. These services often include, but are not limited to, psychological counseling, substance abuse marital counseling, and suicide prevention. Hartwell et al. (1996) found that while approximately 33% of all private non-agricultural worksites surveyed with more than 50 employees offered EAPs to their employees, the authors concluded that EAP programs are more likely to be found in larger worksites.

Measures to mitigate the negative impact of stress vary just as the sources of perceived stress are numerous and varied. Thus, the stress-ethicality relationship is not straight-forward:

Hypothesis 2: *There is a non-linear relationship between stress and ethicality*

In a study on employees in marketing positions, Goolsby (1992) argues that the greater the ethical challenges and perceived ethical demands, the greater the perceived role stress. Schwepker, Ferrell, and Ingram (1997) examined the relationship between ethical climate, ethical conflict, and role conflict stress in sales force. The findings of this study are congruent with the findings of Goolsby (1992). Valentine, Godkin, and Varca (2010) surveyed a large-scale sample of employees of an education-based healthcare institution. They looked at how role conflict stress occurs when a job contains inconsistent expectations incongruent with individual employee beliefs and negative work outcomes. The study identified organizational ethics as a significant factor in the reduction of role conflict stress. Specifically, perceived ethical values and a shared code of ethics decreased role conflict stress.

Parlangeli et al (2020) examined data from 793 non-tenured research staff in academia indicating high levels of unethical behavior, high stress levels, as well as high levels of perceived job insecurity. The data further indicate that perceived stress levels play a strong role in the commission of unethical behaviors. A study of increasing incidences of unethical conduct in the South African business world by van Zyl (1997) found that South African managers clearly operated in stressful circumstances which gave rise to unethical behavior. Elaborating on this in a study of South African Affirmative Action managers, van Zyl and Lazenby (2002) found that high work stress correlates substantially with unethical conduct such as: claiming credit for a subordinate's work, failing to report a co-worker's violation of company policy, and the purchase of shares upon hearing privileged information.

Thus, the stress-ethics relationship is expected to significantly vary from one level of stress to another such that the greater the perceived existence of stress, the greater the ethical challenge or demand to behave in an unethical manner, as hypothesized:

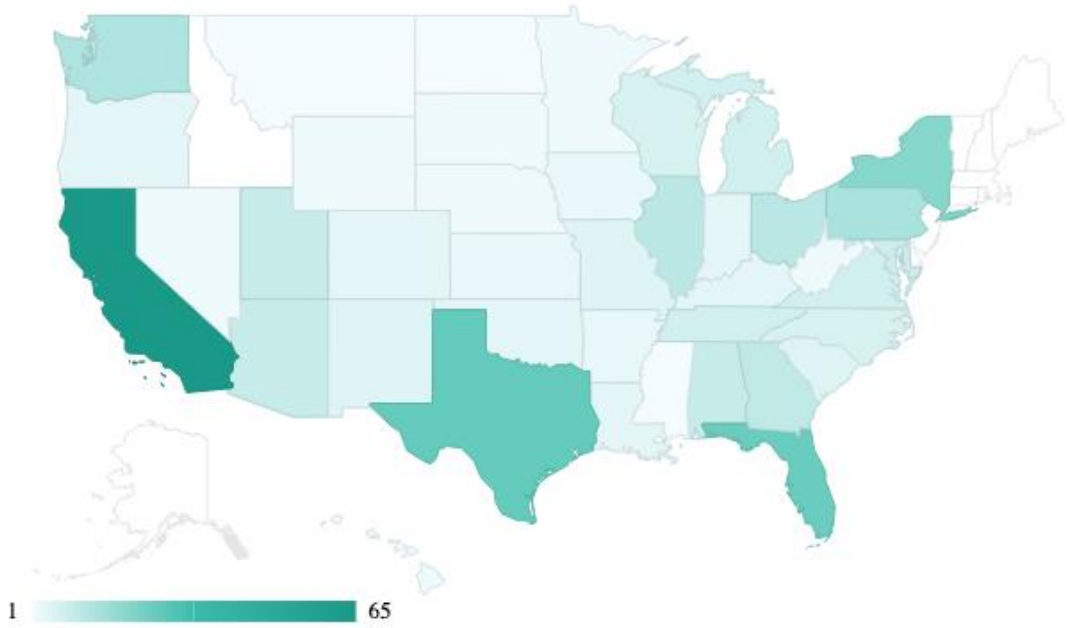
Hypothesis 3: *The level of stress is differently related to ethicality such that high levels of stress are associated with negative ethicality while lower levels result in comparatively less negative ethicality.*

METHODOLOGY

Data Source

A survey questionnaire was designed and administered through SVMK services, a research and design website used by researchers to collect and analyze data from selected and targeted demographics (www.SurveyMonkey.com, 2020). The data was collected from all regions of the United States during March of 2020 (see Figure 1). The instrument was sent out through the portal to random participants, and they were given the choice to opt-out of the survey on a volunteer basis. They were given no compensation for their participation. The responses were aggregated with each respondent's identity remaining unknown to the research team. The survey was sent online, and respondents could choose to answer the questions using either a mobile device or computer.

FIGURE 1
SURVEY RESPONDENTS' LOCATION MAP



- 26 Question Survey
- 459 respondents
- 370 Retained
- Age Balanced (18 – 100)
- Gender Balanced: Census
- Date: March 2020
- Country: USA

The instrument was a four-part survey capturing the characteristics of pressure, ethicality, and stress-related questions. The demographics section included eleven questions designed to document respondent's demographics, including age, gender, employment status, and zip code, and allowed for multiple-choice responses. The pressure and ethics section included eleven questions and considered respondents' sensitivity to pressurized situations at the workplace. The final section examined potential stress-inducing scenarios and events. In total, the survey included 26 questions (see Figure 2). The respondents' locations were the contiguous United States and was automatically stratified into nine regions. A total of 52% of the data was drawn from the Middle Atlantic, South Atlantic, and Pacific areas (see Figure 1). Additionally, the gender was moderately balanced, with 43% males and 57% females.

FIGURE 2
SURVEY INSTRUCTIONS

This questionnaire is intended for academic research. As such, your participation is appreciated, but not mandatory. Your responses will be added to others and your identity will be unknown. It will take less than 10 minutes to complete the survey, and we appreciate your time and effort.

1. Please indicate your age range
   29 & under
   30 – 49
   50 – 64
   65 & Over

2. Please indicate your gender
   Male
   Female

3. Please indicate your marital status
   Married
   Widowed
   Divorced
   Separated
   Never Married

4. Please indicate your highest level of education
   Elementary
   High School
   Some College
   Assoc. Degree
   Bachelor's Degree
   Master's Degree
   Doctoral Degree

5. Please indicate your employment level
   Tradesman
   Clerical
   Entry-level
   Middle Manager
   Upper Manager
   Executive Level

6. Please indicate your employment status
   Employed at a Company
   Self-Employed
   Out of Work (Home)
   Student
   Retired

7. Time employed at current employer
   0 - 1 years
   1 - 3 years
   3 - 10 years
   10 - 25 years
   > 25 years

8. Size of Company of Employment
   Less than 100 employees
   100 - 1000 employees
   1000 - 10,000 employees
   10,000 - 50,0000 employees
   50,000 - 100,000 employees
   > 100,000 employees

9. Indicate your religious service attendance (excluding obligations i.e., weddings, funerals)
   Never Attended
   A few times a year
   Once or twice a month
   Once a week
   More than once a week

10. Indicate your zip code (Use 5 - digit zip code)

    — — — —

11. Please indicate your (or your family's total, if dependent) Gross Annual Household Income
    < $25,000
    $25,000 - $50,000
    $50,000 - $75,000
    $75,000 - $100,000
    $100,000 - $200,000
    > $200,000

Indicate using a scale of: 1 - 5 Points

1 = Strongly Disagree | 5 = Strongly Agree

12. In the past year, I have felt pressure to "excel at a high level" at work no matter the cost.
    1. Strongly Disagree
    2. Somewhat Disagree
    3. Undecided
    4. Somewhat Agree
    5. Strongly Agree

13. In the past year, I have felt pressure to tell a lie (e.g., lying to a manager, supervisor, colleague) at work.
    1. Strongly Disagree
    2. Somewhat Disagree
    3. Undecided
    4. Somewhat Agree
    5. Strongly Agree

14. In the past year, I have felt pressurJJe to steal (e.g., fraud, check tampering, not recording sales in order to skim, or manipulating expense reimbursements) from the company.
    1. Strongly Disagree
    2. Somewhat Disagree
    3. Undecided
    4. Somewhat Agree
    5. Strongly Agree

15. In the past year, I have felt prJessure to misuse company time (e.g., showing up late, altering a time sheet, leaving early).
    1. Strongly Disagree
    2. Somewhat Disagree
    3. Undecided
    4. Somewhat Agree
    5. Strongly Agree

16. In the past year, I have felt pressure to engage in abusive behavior (e.g., using position and power to mistreat or disrespect others) toward others at work.
    1. Strongly Disagree
    2. Somewhat Disagree
    3. Undecided
    4. Somewhat Agree
    5. Strongly Agree

17. In the past year, I have felt pressure to violate company internet policies (e.g., visit websites that have nothing to do with my work).
    1. Strongly Disagree
    2. Somewhat Disagree
    3. Undecided
    4. Somewhat Agree
    5. Strongly Agree

Indicate using a scale of: 1 - 5 Points 1 = Very Often | 5 = Never

18. In the past year, I have told a lie at work. (e.g., lying to a manager, supervisor, colleague).
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

19. In the past year, I have stolen (e.g., fraud, check tampering, not recording sales in order to skim, or manipulating expense reimbursements) from the company.
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

20. In the past year, I have misused company time (e. g. show up late, altering a time sheet, leaving early).
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

21. In the past year, I have engaged in abusive behavior (e.g., using position and power to mistreat or disrespect others) toward others at work.
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

22. In the past year, I have violated company internet policies (e.g., visit websites that have nothing to do with my work).
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

Indicate using a scale of: 1 - 5 Points 1 = Very Often | 5 = Never

23. In the past year, how often have you felt that you were unable to control important things in your life?
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

24. In the past year, how often have you felt confident about your ability to handle your personal problems?
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

25. In the past year, how often have you felt that things were going your way?
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

26. In the past year, how often have you felt difficulties were piling up so high that you could not overcome them?
    1. Very Often
    2. Often
    3. Sometimes
    4. Rarely
    5. Never

A total of 658 responses were collected, with incomplete response data being removed after careful review. Additionally, the category titled "Retired" was removed from the survey because of its irrelevance to the study. Because the study involved white-collar and professional workers, the category "Tradesman" was also removed due to irrelevance to the research focus. After a thorough review, the resulting number of respondents was n=469. Subsequently, as the data was organized and codified, additional data anomalies were discovered, e.g., including erroneous data in the form of text instead of a number or vice-versa, and use of foul language. Such data was not suitable for the analysis and was, therefore, removed. The size of the data after the removal was n=370.

VARIABLES

The study involved one dependent variable, Ethicality, and three predictors or independent variables; stress, along with company size, employment age, and employee gender (see Table 1). The company size was interval data starting at 100 employees or less and capping at 100,000 and greater. Further details regarding these independent variables are provided in later sections of the paper. These predictors, i.e., independent variables, are paired with the dependent variable, and corresponding moderators as illustrated in Table 2. A moderator, stress, was subsequently introduced to examine the effects on Ethicality and was the defining component in our research.

TABLE 1
HYPOTHESIS TESTS

Hypothesis	Dependent Variable	Independent Variable (Predictor)	Relationship To Ethicality
H1	Ethicality	Stress	Negative
H2	Ethicality	Stress	Non-Linear
H3	Ethicality	Stress (Hi Level)	Negative
H3	Ethicality	Stress (Low Level)	Positive

We tested the hypotheses using a linear regression model, and the data was processed using the Python programming language for statistical analysis purposes. Each hypothesis was tested for statistical significance at the $p \leq .05$, $p \leq 0.01$, and $p \leq 0.001$ levels. Table 2 shows the hypotheses tested and the subordinate hypothesis.

Ethicality

Ethicality was the "dependent variable" in this study, and respondents were asked a series of questions to understand their degree and tolerance to Ethicality under circumstances of pressure typical to their demographics. The response data were codified within Part II of the survey and listed as questions 12-22. The questions were designed using a 5-point Likert scale system with an answer of 1) indicating "strongly disagree" (Less pressure) and 5) suggesting "strongly agree" (More pressure). The questions were used to determine if those conceding to pressure perceived a dampening effect on their Ethicality.

Demographics

The first section of the survey instrument (see Figure 2) resulted in the collection of a combination of nominal and interval data from the anonymous data sourced from SVMK service. There were eleven questions in Part I, including age, gender, marital status, level of education, employment level, employment status, employment tenure, company size, religiosity, zip code, gross annual household income. Religiosity introduces the behaviors of those attending religious services.

Question 1 categorized demographic data as follows: under 30, 30-49, 50-64, & 65 and older. These pre-determined ranges have been used and validated by researchers such as Sankar and Bhattacharya (2001). Questions 9, 10, and 11 were not considered relevant to the current research study and therefore eliminated. Question 8 (size of the company) thus became one of the three predictor variables that were regressed on Ethicality and then stress, as a moderator, to determine statistical significance. All others were held as control variables.

The second section included six questions (#12 - #17) related to a perception of pressure in the workplace. Question 12 was removed from the study as it was deemed not essential to our study. All the remaining questions were developed based on a Likert scale with a "1" indicating "strongly disagree" and "5" indicating "strongly agree" to the question.

The third section included questions related to Ethicality in the workplace and mirrored the questions regarding pressure, the difference being the requirement for respondents to document actual outcomes to situations based on their experiences. In other words, rather than asking how the respondents felt about the situation (perception of pressure or not), the questions inquired about resulting behavior in the workplace. There was a total of five questions numbered from Q18 – Q22. The questions were again based on a Likert scale with a "1" indicating "very often" and "5" indicating "Never" to the question. The fourth section included four questions (#23 - #26) related to stress (external factor) in the workplace. The questions were built on a Likert scale with a "1" indicating "very often" and "5" indicating "Never" to the question. The questions were designed as the pressure questions.

In addition, the survey produced two additional variables; identification of regional location and electronic device utilized to access the survey. As shown in Figure 2, the survey showed stratified data from nine regions of the country, including the Pacific coast to the New England area. Just over 50% of respondents were from the Pacific (21.8%), South Atlantic (18.20%), and Middle Atlantic (12.60%) areas of the country.

Pressure

As previously stated, the second section included six questions (#12 - #17) aimed at gathering responses related to perceptions of pressure in the workplace. Question #12 was later removed as it was deemed inappropriate for this study and rhetorically inconsistent with the other questions. The remaining questions, #13 - #17, designed as a 5- point Likert scale using ordinal data for the responses, permitted the construction of the variable representing “Pressure”. The relevant questions attempted to solicit responses from the participants ranging from 1) strongly disagree to 5) strongly agree. A "1" response indicated a tendency toward less pressure, and a "5" indicated a tendency toward greater pressure.

Company Size

Company size was a third independent variable or predictor and appeared as interval data in Part 1 of the survey under question number eight. This question asked about the number of employees currently at

the respondents' organization. The intervals included: a) up to 100 employees b) up to 1,000 employees c) up to 10,000 employees d) up to 50,000 employees e) up to 100,000 employees f) greater than 100,000 employees. Most of the respondents (>50%) were in the less than 100 (44%) and between 100-1000 (22%). The company size variable was stratified into Levels 1 – 5.

Stress

The focus of this study is to determine the level of "perceived" stress in the workplace and how that reacts with ethicality. Studies have shown that pressure is an antecedent to unethicality and originating from the external (Barsky, 2011; Tepper, 2010 & Boyd, 1997). However, stress appears to exist as a reaction to pressure and reside within an individual. A stress response occurs when an external or environmental challenge or demand disrupts an individual homeostasis state (Cannon, 1932, 1935).

The survey instrument targeted these specific concerns as demonstrated in questions 22 – 26 (see Figure 2).

Control Variables

The control variables included: age, gender, marital status, level of education, religiosity, zip code, and annual income. Thirty-eight of the respondents were between 30-49 years of age. There were 58% female and 42% male respondents. The largest (46%) number of responses for marital status was "married". Fifty percent of the respondents listed some college and bachelor's degrees, with 16% indicating the receipt of graduate degrees.

DATA ANALYSIS SETUP AND RESULTS

Experimental Setup

We tested the hypotheses using both a univariate and a multivariate linear regression model, and the data was processed using the Python programming language using standard statistical analysis libraries. Each hypothesis was tested for statistical significance at the $p \leq .05$, $p \leq 0.01$, and $p \leq 0.001$ levels. We also process the data by removing columns that are not relevant in our study, for example, dates and arbitrary response I.D. strings associated with the survey delivery control mechanism and not relevant to our study.

Summary Statistics

The descriptive statistics of the full dataset are shown in Table 2 (for mean centered descriptive statistics see Appendix Table 2A). The variable *stress* is assessed as a continuous variable, which results from averaging responses to stress-related questions (see survey in Figure 2). Table 2 shows that the resulting total count of records is 370, with some variables constructed as binary to explicate the impact of stress levels.

TABLE 2
DESCRIPTIVE STATISTICS FOR THE ENTIRE DATASET

Variable	Count	Mean	Std Dev	Min	Max
Marital Status	370	2.81	1.85	1	5
Employment Status	370	1.82	1.10	1	4
Income	370	3.22	1.47	1	6
Level Education	370	4.15	1.47	1	7
Pressure	370	1.78	0.95	1	5

Stress	370	3.21	0.56	1	5
Stress^2	370	10.63	3.72	1	25
Stress Level 1	370	0.01	0.10	0	1
Stress Level 2	370	0.08	0.27	0	1
Stress Level 3	370	0.60	0.49	0	1
Stress Level 4	370	0.29	0.45	0	1
Stress Level 5	370	0.02	0.15	0	1
Ethicality	370	4.36	0.87	1	5

TABLE 2A
MEAN CENTERED DESCRIPTIVE STATISTICS FOR THE ENTIRE DATASET

Variable	Count	Min	Mean	Max	Std Dev
Marital Status	370	-0.98	0.000	1.19	1.00
Employment Status	370	-0.74	0.000	1.98	1.00
Income	370	-1.51	0.000	1.88	1.00
Level Education	370	-2.14	0.000	1.94	1.00
Pressure	370	-0.82	0.000	3.37	1.00
Stress	370	-3.92	0.000	3.17	1.00
Stress^2	370	-2.58	0.000	3.86	1.00
Stress Level 1	370	-0.10	0.000	9.55	1.00
Stress Level 2	370	-0.29	0.000	3.42	1.00
Stress Level 3	370	-1.22	0.000	0.82	1.00
Stress Level 4	370	-0.64	0.000	1.57	1.00
Stress Level 5	370	-0.16	0.000	6.32	1.00
Ethicality	370	-3.86	0.000	0.74	1.00

Univariate Correlation

All variables were centered following the recommended practices of data analytics and machine learning (Asparouhov, T., & Muthén, B., 2019). Once this is done, correlations and *p*-values between variables are calculated and reported in Table 3. To make a clear distinction, we will refer to this as *univariate* regression analysis. Then, we perform a *multivariate* regression analysis where Ethicality is the dependent variable, Stress is the independent variable, and the rest of the columns are control variables.

TABLE 3
UNIVARIATE CORRELATION MATRIX

Variables	Ethicality	Marital Status	Employment Status	Income	Level Education	Pressure	Stress	Stress^2	Stress Level 1	Stress Level 2	Stress Level 3	Stress Level 4
Marital Status	0.0601											
Employment Status	-0.0306	0.1763***										
Income	0.0221	-0.3130***	-0.2792***									
Level Education	-0.0400	-0.2110***	-0.2044***	0.s***								
Pressure	-0.5768***	0.0483	0.1601**	-0.0330	-0.0295							
Stress	-0.3612***	-0.0105	0.0442	-0.0921	0.0085	0.0529						
Stress^2	-0.4062***	-0.0079	0.0939	-0.1310*	-0.0127	0.0992	0.9793***					
Stress Level 1	0.0773	-0.0458	0.1837***	-0.1045*	-0.0992	0.1448**	-0.4100***	-0.2706***				
Stress Level 2	-0.0229	0.0631	0.0206	0.0039	-0.0016	0.0842	-0.4436***	-0.3923***	-0.0305			
Stress Level 3	0.2202***	-0.0376	-0.1604**	0.1236*	0.0253	-0.1641**	-0.3333***	-0.4100***	-0.1273*	-0.3552***		
Stress Level 4	-0.1035*	0.0114	0.0943	-0.0596	0.0097	0.0622	-0.5467***	-0.5304***	-0.0667	-0.1860***	-0.7768***	
Stress Level 5	-0.4083***	0.0069	0.0739	-0.1549**	-0.0395	0.0953	-0.5012***	-0.6101***	-0.0165	-0.0460	-0.1923***	-0.1007

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Our univariate and multivariate analysis is performed using the python language; the univariate analysis uses Pearson-correlation methods, and the multivariate analysis solves an ordinary least squares problem. The former uses Pandas libraries (W. McKinney 2011), and the latter uses the Statsmodels library (S. Seabold et al. 2010). Table 3 reveals that stress indicators are correlated with other variables with high significance, e.g., ethicality, employment status, income, or pressure.

Multivariate Regression Results

Next, we performed a multivariate regression analysis in which several variables remained as control variables while Ethicality remained the dependent variable, and then we introduce stress as the independent variable in different forms as we test our hypothesis. We approach this problem using the standard multivariate linear regression, usually found or known as ordinary least squares methodologies (Krein 1982). We use the Python programming language with standard libraries to execute this analysis.

Our three hypotheses were tested and shown in Table 4. We used the following naming convention on Table 4 for clarity: H*i* refers to the *i*-th hypothesis; and S.E. stands for standard error. The multivariate analysis for Hypothesis 1 is shown in Table 4. To test for Hypothesis 1 (H1), the independent variable *stress* is introduced with a highly significant ($p<0.001$) negative correlation coefficient, similar to pressure; for H2 we introduce the independent variable squared to investigate the non-linear relationship with respect to the dependent variable. The resulting coefficient of the squared variable is negative; thus, we can say that it represents a non-linear relationship with $p<0.001$. Lastly, we introduce the levels of stress as dummy variables, with the highest level (Level #5) serving as the baseline. Stress levels 1-4 all result in positive and significant ($p<0.001$) coefficients; with correlation coefficients decreasing as the level of stress increases. All these findings support Hypothesis 1 through 3.

TABLE 4
MULTIVARIATE REGRESSION ANALYSIS: STRESS

Results of Moderated Regression Analysis

Dep. Variable: **Ethicality** Ind. Variable: **Stress**

Control Variables:	Baseline		*p*	SE	H1		*p*	SE	H2		*p*	SE	H3		*p*	SE
Constant	5.1200	***	0.000	0.185	6.7700	***	0.000	0.258	6.0123	***	0.000	0.193	3.1766	***	0.000	0.150
Marital Status	0.0415		0.051	0.021	0.0349		0.074	0.019	0.0316		0.100	0.019	0.0400	*	0.034	0.019
Emplymnt Status	0.0441		0.217	0.036	0.0497		0.129	0.033	0.0605		0.061	0.032	0.0419		0.188	0.032
Income	0.0384		0.178	0.028	0.0158		0.547	0.026	0.0075		0.772	0.026	0.0044		0.862	0.025
Level Education	-0.0305		0.264	0.027	-0.0210		0.400	0.025	-0.0212		0.389	0.025	-0.0181		0.450	0.024
Pressure	-0.5372	***	0.000	0.039	-0.5224	***	0.000	0.036	-0.5082	***	0.000	0.035	-0.5171	***	0.000	0.035
Stress					**-0.5090**	***	0.000	0.060								
Stress^2									**-0.0833**	***	0.000	0.009				
Stress Level 1													**3.2316**	***	0.000	0.377
Stress Level 2													**2.0288**	***	0.000	0.240
Stress Level 3													**2.0731**	***	0.000	0.216
Stress Level 4													**1.8741**	***	0.000	0.218
R^2-value	0.347				0.454				0.470				0.504			
Adjusted R^2	0.338				0.445				0.461				0.491			
F-statistic	38.68				50.38				53.59				40.62			
Degrees of Freedom	364				363				363				360			

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

DISCUSSION AND CONCLUSION

The research reported in this paper attempts to understand how stress can impact the behavioral ethics of individuals. We have examined the role of a stressful environment on employees in organizations to understand the extent to which they may be conducive or debilitating to ethical conduct. To test for Hypothesis 1 (H1), the independent variable *stress* was introduced with a highly significant negative correlation coefficient; thus, supporting Hypothesis 1. To test for Hypothesis 2, we introduce the independent variable squared to investigate the non-linear relationship with respect to the dependent variable. The resulting coefficient of the squared variable is negative; thus, we can say that it represents a non-linear relationship; thus, supporting Hypothesis 2. Lastly, we introduce the levels of stress as dummy variables, with the highest level (Level #5) serving as the omitted variable. Stress levels 1-4 all result in positive and significant coefficients; with correlation coefficients decreasing as the level of stress increases. All these findings support Hypothesis 1 through 3.

While this study examines a stressful environment on employees in organizations to understand the extent to which they may be conducive or debilitating to ethical conduct, we believe a fruitful future investigation can be had by examining perceptions of entrepreneurs. As the body of this type of research builds, the practical applications of these results may assist organizations in understanding how to address behavioral ethics within their corporate environment. In addition, an exploration of the extent to which "healthy" stress impacts ethical behavior would be helpful in advancing the literature and practitioners' understanding of behavior within organizations.

While the results of this research are insightful and seeks to fill a gap in the occupational stress literature by making a tentative step toward examining the extent to which stress is related to ethicality, a limitation is that all data are cross sectional in nature and therefore not reliable in making causal conclusions. Future research would benefit from the use of longitudinal data to draw stronger conclusions regarding causality. The study of behavioral ethics is simultaneously rich and extraordinarily important, with the potential to improve the functionality of organizations and improve the quality of life for those who work in these organizations.

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