

Evaluating the mediating effect of Emotional Contagion between perceived stress and in-role performance

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Abstract

Emotional contagion is one of the most prevalent factors in internal as well as external interaction in an organisation. Previous research has brought to the fore, the impact of stress on performance. In this paper, we study the mediating effect of emotional contagion on the relationship between stress and performance. After a thorough review of literature, we find this relationship as a gap area; therefore, we test whether there is a full or a partial mediation effect. A gender based multi-group analysis has also been done in order to compare the difference in the relationship between males and females. Our model has been tested by gathering data from white collared

employees across various industries. Results show that emotional contagion partially mediates the relationship between perceived stress and in-role performance, in general. Additionally, the mediation effect between perceived stress and in-role performance is the same between males and females. With the help of this research, the theory on emotional contagion can be advanced and new pathways can be formulated for enhancing performance and reducing stress.

Keywords: Emotional Contagion, performance, stress, mediating effect, gender, PLS

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Introduction

Emotional contagion has assumed great importance in interpersonal relationships across organisations (Banerjee & Srivastava, 2019). It is an integral part of any organisational setup and wields great influence over groups and individuals (Fisher, 2019). It is the process of transmitting one individual's emotions to another either voluntarily or involuntarily (Doherty, Orimoto, Singelis, Hatfield & Hebb, 1995; Barsade, 2002; Srivastava and Banerjee, 2016). It impacts different aspects of an individual like stress, burnout, exhaustion and performance (Gump & Kulik, 1997).

Emotional contagion and stress are intricately interconnected (Vijayalakshmi & Bhattacharyya, 2012). Previous literature reveals that higher stress has a direct and positive relationship with emotional contagion. Emotional contagion also has a direct impact on the performance of an individual (Johnson, 2008). Higher the emotional contagion, better will be the performance. So emotional contagion acts as a mediator between stress and performance.

Emotions have always played a major role between stress and performance. Researchers have stated how increasing stress leads to declining performance due to the presence of negative emotions like exhaustion, frustration, anger and burnout (Hatfield et al., 1993). Studies suggest that human resource practitioners must take into consideration individual based characteristics for enhanced organisational performance (Gbadamosi & Ross, 2012; Lazarus, Deese, & Osler, 1952). Therefore, emotional contagion has an important part in explaining the relationship between stress and performance.

Studying emotional management in the professional world is essential due to its inter-disciplinary presence (Ariely, 2010). The study of emotional contagion will help improve various social processes and group dynamics (Rothbard, 200; Barsade, 2002). Since stress and performance are two imperative features of organisations, therefore, a study of emotional contagion in this connection will help in improving

organisations' culture. This research covers a lesser-explored area of organisational research, i.e., using emotional contagion as a mediator between perceived stress and in-role performance.

Review of Literature

A negative relationship exists between stress and performance due to the presence of various conditions in the environment like social circumstances, types of tasks and work overload (Welford, 2007). A study on females revealed that stress and anxiety increased due to the presence of mimicry stemming out of emotional contagion (Gump & Kulik, 1997). Another study revealed that there was a positive relationship between emotional contagion and task performance (Barsade, 2002). These studies reveal that stress, emotional contagion and performance are intricately interconnected. Therefore, in order to understand their inter-relationship, emotional contagion has been used as a mediating variable between the independent variable 'perceived stress' and dependent variable 'in-role performance'.

The Intergroup Emotions theory which forms the theoretical grounding for this study, states that individuals derive social identity from their groups. People tend to mimic group behaviour (Mackie, Maitner, & Smith, 2009). Social identification is aided by emotional contagion (Tajfel & Turner, 1986). Emotions trickle down on group members eventually affecting outcomes like performance and attitudes. Another theoretical underpinning is the Psychological stress theory by Lazarus (1966). This theory explains perceived stress as a cognitive method derived from its environment (Lazarus, 1966). Emotions play a major role in recognizing and coping with stress (Lazarus, 1991). A research study on occupational well-being revealed that stress has an impact on organisational performance (Cotton & Hart, 2003). These theories have aptly exhibited the inter-relatedness amongst stress, emotional contagion and performance. Their specific impact on each other has been investigated in this study. The post-modernist approach on gender

differences discusses the contrasting experiences of males and females owing to socio-cultural assumptions (Hare-Mustin & Marecek, 1988). This idea has further helped in anchoring the work from a gender-based perspective.

Stress has been discovered as one of the main 'psychological variables' associated with emotional contagion especially amongst healthcare professionals (Omdahl & O'Donnell, 1999). A strong connection between stress and emotional contagion exists, eventually leading to decline in organisational commitment. Another study revealed that pessimism is a negative emotion which individuals experience due to stress, ultimately impacting other organisational aspects (Howard & Gengler, 1991). Researchers also emphasised that this relationship needs to be explored (Vijayalakshmi & Bhattacharyya, 2012). In one experiment, it was found that positive emotional contagion leads to improved performance through mood transference (Barsade & Knight, 2015). A leadership study also revealed that the performance of followers was directly impacted by the leaders' displayed emotions (Grandey, Dickter & Sin, 2004; Cherulnik, Donley, Wiewel & Miller, 2001).

Emotional contagion surfaced as a common factor linking stress and performance. Therefore, a major gap area emerging from previous studies has been addressed in this research paper by connecting emotional contagion as a mediating variable between stress and performance.

Research Questions

In order to understand the relationship between the three variables - emotional contagion, stress and performance management, the following research questions need to be addressed:

1. What is the mediating effect of emotional contagion between perceived stress and in-role performance?
2. Does gender bring any difference in the mediating role of emotional contagion between stress and performance?

Hypotheses

The aim of the present study is to understand the inter-relationship amongst the three variables – emotional contagion, stress and in-role performance. To understand the established relationships, hypotheses have been derived by assessing the research gaps in literature.

A research study in the nursing industry established a positive relationship between stress and emotional contagion (Omdahl & O'Donnell, 1999). Another study focussed on the same relationship, but in the customer service industry (Pugh, 2001). Previous research has established positive connections between emotions and performance (Verbeke, 1997). According to literature review, emotional contagion is closely related to both stress and performance. From the gender perspective, it was discovered that women are more susceptible to emotional contagion than men, thus emphasizing that there is a gender-based difference (Doherty, Orimoto, Singelis, Hatfield & Hebb, 1995). Therefore, the hypotheses for the study:

H1.a. Emotional contagion completely mediates the relationship between perceived stress and in-role performance

H1.b. Emotional contagion partially mediates the relationship between perceived stress and in-role performance

H2. There is a gender difference in the mediation relationship of emotional contagion between perceived stress and in-role performance

Research Methodology

Prior researchers established, separately, the relationships between stress and emotional contagion; and between emotional contagion and performance. However, a mediation analysis is missing. The gender perspective is another gap area. Therefore, this research paper aims at addressing these gaps through a comprehensive analysis.

We begin with the operational definition of the chosen variables. The first variable, stress, is defined as the cognitive responsiveness of frenetic happenings in one's life (Coshen, Kamarck, & Mermelstein, 1983). Since it is a perception of viewing life events as stressful, therefore, it is known as perceived stress. Sheldon Cohen's 14 item Perceived Stress Scale has been used here (Cohen, 1983). The second variable, emotional contagion, is the process of taking on the emotions that are present in an individual's surroundings (Hatfield, Cacioppo, & Rapson, 1993). Doherty's 15 item Emotional contagion scale has been used, which is widely cited (Doherty, 1997). Finally, the third variable, performance, at an individual level, is defined as a combination of behavioural and attitudinal aspects encompassing responsibilities associated with task fulfilment (Sparrowe, Liden, Wayne & Kraimer, 2001). This process is closely related to an individual's role accomplishment; therefore, it is termed as 'in-role performance'. William and Anderson's 7 item In-role performance scale has been used to measure performance (William & Anderson, 1991).

As a comprehensive research spanning across different industries, samples were collected across various industries – hospitality, IT, retail, education, e-commerce, banking, manufacturing and healthcare. Purposive sampling technique was used. The ratio of sample to number of items on the scale, i.e., 5:1 & 10:1, was used as a parameter for choosing appropriate sample size (Bentler & Chou, 1987). For a Structural Equation Modelling, a minimum of 200 samples is considered perfect (Kelloway, 1998; Hair, Black, Babin, Anderson, & Tatham, 1998). So, a total of 383 samples were collected for 36 scale items. Samples were selected based on the gender criteria to ensure equal representation of both males and females. Full time employees on company payroll, engaged in white collared jobs were selected.

An online survey questionnaire was used to gather data. Respondents filled in the questionnaire via Google forms. HR Managers of various companies were approached and briefed about the study. They

distributed and administered the questionnaire, electronically, to their employees. 400 people were requested to participate in the survey; however, 383 forms were eventually filled and received.

Amongst the three variables, two were reflective and one was formative. Perceived stress and in-role performance were reflective variables while emotional contagion was a formative variable. Therefore, Smart PLS version 3 was used for data analysis. Whenever there is a combination of reflective and formative variables, Smart PLS is considered to be the best tool for conducting Structural Equation Modelling (Ringle, Da Silva, & Bido, 2015).

Findings and Discussions

This section is divided into two sub-sections – measurement model assessment and testing of the structural equation model.

Measurement Model Assessment: The assessment of measurement model helped in analysing the relationship between measured variables and latent constructs for both reflective and formative variables. Factor analysis, discriminant validity, convergent validity and model fitness were tested (Anderson & Gerbing, 1988). Smart PLS version 3 is the best suited tool for SEM as there is a combination of both reflective and formative variables in this study (Kock, 2015).

Confirmatory Factor Analysis (CFA): In order to check the reliability and validity of the scales used, a confirmatory factor analysis (CFA) was done. The assessment of formative and reflective constructs was done separately (Becker, Klein & Wetzels, 2012). Perceived stress and in-role performance are reflective constructs and emotional contagion is a formative construct in this study. The scale for the study was finalized on the basis of the factor loadings. If any loading is less than 0.7, those items were dropped. However, in cases where dropping an item did not improve the overall scale validity, they were retained (Wong & Kwong-Kay, 2013).

Table 1. Scale Items

1. Perceived Stress Scale		
Statement	Factor Loading	Action
1. In the last month, how often have you been upset because of something that happened unexpectedly?	0.844	Retained
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0.861	Retained
3. In the last month, how often have you felt nervous and stressed?	0.881	Retained
4. In the last month, how often have you dealt successfully with irritating life hassles (R)?	0.511	Dropped
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life (R)?	0.661	Retained*
6. In the last month, how often have you felt confident about your ability to handle your personal problems (R)?	0.679	Retained*
7. In the last month, how often have you felt that things were going your way (R)?	0.700	Retained
8. In the last month, how often have you found that you could not cope with all the things that you had to do?	0.564	Dropped
9. In the last month, how often have you been able to control irritations in your life (R)?	0.641	Retained*
10. In the last month, how often have you felt that you were on the top of things (R)?	0.500	Dropped
11. In the last month, how often have you been angered because of things that happened that were outside of your control?	0.056	Dropped
12. In the last month, how often have you found yourself thinking about the things that you have to accomplish?	0.241	Dropped
13. In the last month, how often have you been able to control the way you spend your time (R)?	0.458	Dropped
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0.576	Dropped

(R) reverse coded

*Retained because dropping these items did not improve factor loadings

2. In-Role Performance Scale		
Statement	Factor Loading	Action
1. I adequately complete assigned duties.	0.759	Retained
2. I fulfil responsibilities specified in the job description.	0.858	Retained
3. I perform tasks that are expected of me.	0.790	Retained
4. I meet formal performance requirements of the job.	0.809	Retained
5. I engage in activities that will directly affect my performance evaluation.	0.538	Dropped
6. I neglect aspects of the job I am obligated to perform (R).	0.277	Dropped
7. I fail to perform essential duties (R).	0.433	Dropped

(R) reverse coded

Table 1. Scale Items

3. Emotional Contagion Scale		
Statement	Factor Loading	Action
1. If someone I'm talking with begins to cry, I get teary-eyed.	0.883	Retained
2. Being with a happy person picks me up when I'm feeling down.	0.902	Retained
3. When someone smiles warmly at me, I smile back and feel warm inside.	0.891	Retained
4. I get filled with sorrow when people talk about the death of their loved ones.	0.844	Retained
5. I clench my jaw and my shoulders get tight when I see angry faces on the news.	0.584	Retained*
6. When I look into the eyes of the one I love, my mind is filled with thoughts of romance.	0.859	Retained
7. It irritates me to be around angry people.	0.851	Retained
8. Watching the fearful faces of victims on the news makes me try to imagine how they might be feeling.	0.666	Retained*
9. I melt when the one I love holds me close.	0.860	Retained
10. I get tense when overhearing an angry quarrel.	0.820	Retained
11. Being around happy people fills my mind with happy thoughts.	0.821	Retained
12. I sense my body responding when the one I love touches me.	0.838	Retained
13. I notice myself getting tense when I'm around people who are stressed.	0.807	Retained
14. I cry when I watch sad movies.	0.825	Retained
15. Listening to the shrill screams of a terrified child in a dentist's waiting room makes me feel nervous.	0.731	Retained

Happiness - 2, 3, 11; Love - 6, 9, 12; Fear - 8, 13, 15; Anger - 5, 7, 10; Sad - 1, 4, 14

**Note: Item 8 was retained; in spite of score less than 0.7, as deleting it did not improve the other factor scores*

Table 2. Final Scale Items

Variables	Scales	Final items
Perceived stress	Perceived stress scale	7 items
In-role performance	In-role performance scale	4 items
Emotional contagion	Emotional contagion scale	15 items

Reflective constructs are assessed with the help of Convergent Validity and Discriminant Validity (Bido, Silva & Ringle, 2014). Convergent Validity has been measured with the help of Cronbach's Alpha, Composite Reliability and Average Variance Extracted. While Cronbach's Alpha and Composite Reliability need to be above 0.7, AVE should be above 0.5 (Fornell & Larcker, 1981). Table 3. shows that scale reliability is good.

Table 3 Scale Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Perceived Stress	0.881	0.968	0.895	0.556
In-Role Performance	0.822	0.856	0.881	0.648

The assessment for Discriminant Validity has been done with the help of Latent Variable Scores (LVS) which should not be more than 0.7 (Fornell & Larcker, 1981). As shown below, according to the HTMT method, the reflective variables do not have any discriminant validity issues.

Table 4. HTMT

	In-Role Performance	Perceived Stress
In-Role Performance	0.055	
Perceived Stress	0.343	0.643

The **formative construct**, Emotional Contagion, has been assessed with the help of Collinearity statistics by looking at the VIF, t-statistics and p-values (Fox, John & Monette, 1992). Bootstrapping method was used at 1,000 iterations. Factor method was chosen to calculate t-statistics and p-values. Emotional Contagion turned out to be a good formative construct as t-statistics is above 1.96 and p-values are significant at less than 0.05 (Wong & Kwong-Kay, 2013).

Table 5. Analysis

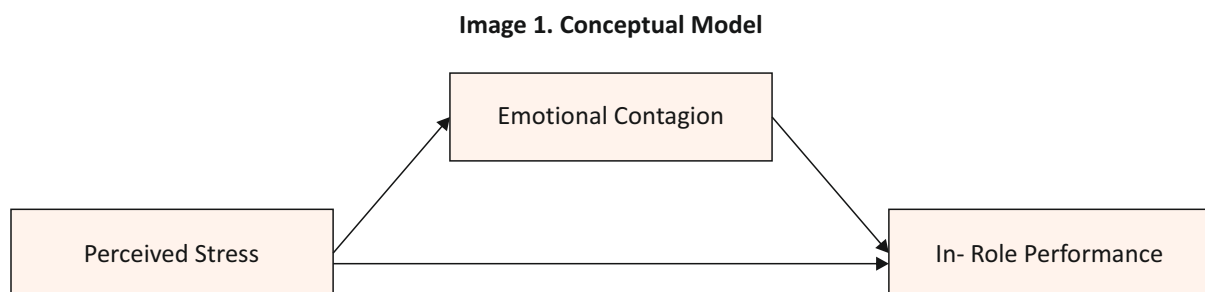
	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Anger -> EC	0.22	0.22	0.006	35.353	0
Fear -> EC	0.222	0.223	0.006	37.058	0
Happy -> EC	0.327	0.326	0.007	46.251	0
Love -> EC	0.25	0.25	0.009	27.242	0
Sad -> EC	0.264	0.264	0.009	28.422	0

The **collinearity diagnostics** measured by VIFs for formative constructs are all less than 3.00 (Fox, John & Monette, 1992). In order to ease the calculation, each of the 15 items on the emotional contagion scale was coded and then tested.

Table 6. VIFs

	VIF
nEC1sr	1.935
pEC2h	2.445
pEC3h	2.243
nEC4sr	1.733
nEC5ar	1.129
pEC6L	1.778
nEC7ar	1.221
nEC8fr	1.125
pEC9L	1.785
nEC10ar	1.313
pEC11h	1.707
pEC12L	1.777
nEC13fr	1.266
nEC14sr	1.699
nEC15fr	1.179

Structural Model Testing: The structural model represents the conceptual map, derived from theory, showing the relationships between variables as shown below (Hair et al., 1998).

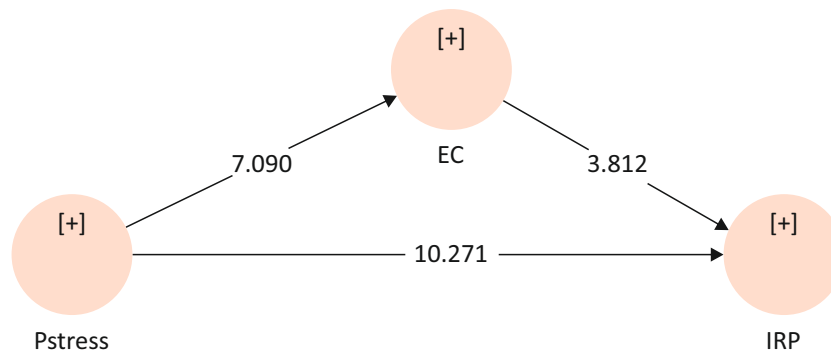


The **goodness of fit** was tested to assess 'the hypothesized model and the observed covariance matrix' depicted by the SRMR value which should be less than 0.08 and NFI which should be more than 0.09 (Hu & Bentler, 1995). In this case, both the conditions are met. Thus, the hypothesised model has good model fitness, as shown below:

Table 7. Model Values

	Saturated Model	Estimated Model
SRMR	0	0.054
d_ ULS	0	0.098
d_ G1	0	0.024
d_ G2	0	0.023
Chi-Square	65.148	
NFI	1	0.917

Image 2. Path Coefficients



The path coefficients shown above were derived with the Bootstrap method at 2,000 iterations using the path model (Kock, 2015). These coefficients reflect the strength of the relationships between two variables, which is quite strong here (Ringle et al, 2014). The simple PLS algorithm, shown below, helps in assessing the direction of the relationship between these variables.

Image 3. Variable Relationships

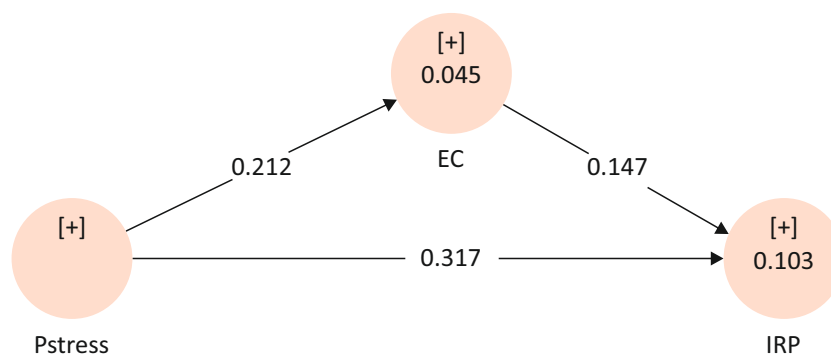


Image 3 shows that there is a negative relationship between perceived stress and in-role performance while there is a positive relationship between perceived stress and emotional contagion; also between emotional contagion and in-role performance.

The test of **Mediation** revealed that emotional contagion mediates the relationship between perceived stress and in-role performance as p-value is less than 0.05, as shown in Table 8. In this case, partial mediation happened as the specific indirect effect, shown below, is insignificant (p-value 0.001). This is an essential criterion for establishing mediation (Zhao, Lynch, and Chen, 2010; Hayes & Scharkow, 2013).

Table 8. Mediation Analysis

Specific indirect effect	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Pstress -> EC -> IRP	0.031	0.031	0.009	3.28	0.001

Multi-group Analysis (MGA) helped in assessing the gender difference for mediation analysis. As is evident from the p-values (more than 0.05) shown below, there is no difference in mediation analysis based on gender. Thus, in case of both males and females, emotional contagion partially mediates the relationship between perceived stress and in-role performance.

Table 9. Parametric test - difference between males and females

	Path Coefficients-diff (female - male)	t-Value (female vs male)	p-Value (female vs male)
EC -> IRP	0.11	1.432	0.152
PStress -> EC	0.076	1.227	0.22
Pstress -> IRP	0.072	1.196	0.232

Hypotheses Test Results

With the help of the analysis above, the hypotheses test results for the study is presented in Table 10.

	Hypotheses	Results
H1.a.	Emotional contagion completely mediates the relationship between perceived stress and in-role performance	Not Supported
H1.b.	Emotional contagion partially mediates the relationship between perceived stress and in-role performance	Supported
H2.	There is a gender difference in the mediation relationship of emotional contagion between perceived stress and in-role performance	Not Supported

This study discovered that emotional contagion partially mediates the relationship between perceived stress and in-role performance of an individual in an organisation. Additionally, gender does not have any impact on this relationship. Thus, emotional contagion has equal effects in case of both males and females. These results advocate that there is a negative relationship between stress and performance, and emotional contagion acts as a causal factor behind it (Westman, 1990; Jamal, 2007). With an increase in organisational stress, individual performance declines due to emotional contagion in one's surroundings (Verbeke, 1997; Omdahl & O'Donnell, 1999). However, the findings also contradict an established idea that women are more emotionally contagious than men (Magen & Konasewich, 2011; Lin, Huang & Chiang, 2008). In this case, no difference has been found. The findings, thus, have essential managerial and practical implications.

Key Insights

This research helped in understanding how emotional contagion acts a causal factor between stress and performance management. There is a negative co-relationship between stress and performance, and emotional contagion is the main reason behind it. This is generalizable in the Indian context as this is a comprehensive research spanning across different industries, so responses have been collected across various industries like hospitality, IT, retail, education, e-commerce, banking, airlines, manufacturing, medical services and media. A similar research, based in the Indian context, discusses that when a person goes through anxiety, it results in stress which impacts an individual's engagement with his work thus affecting his performance (Kapoor et. al, 2019). This is applicable not only to India, but to all the developing nations; there is a requirement to manage emotional contagion in order to minimize stress and maximize performance.

The effect of emotional contagion is not only limited to India or other developing nations, but its effect has been researched in North America and Europe as well. A recent research study in North America discusses about the strong impact of emotional contagion during stressful and uncertain times like the COVID-19 pandemic. However, by understanding the way it works, stress can be kept at bay (Barsade, 2020). Another research in the European market discusses the significant role of emotional contagion in high performing teams in the investment banking industry (Dobra-Kiel, 2018). Thus, this study gives an insight on how performance can be improved if organisations come up with strategies to control stress and emotional contagion.

Incremental Contribution

A.Theoretical Implications

Being aware of an individual's own emotions and emotions surrounding them, helps them in managing relationships and improve performance (Rai, 2017). However, the mediating effect of emotional contagion was absent. So, this research has made an incremental

contribution to theory by linking research on stress-emotional contagion and research on emotional contagion-performance. We advance the literature on emotional contagion by introducing it as a causal factor in the stress-performance relationship. These inferences are strengthened by the research framework set across industries and professions. This provides for a generalized and holistic perspective opposed to prior research in specific industries.

Additionally, this study also reveals that emotional contagion has similar causal impact between stress and performance in case of both males and females. Past research has only focused on reactions to emotional contagion as a gender-based concept. However, with the help of this research, a new gender perspective on emotional contagion has emerged which showcases how behaviour and reactions vary based on the context of study.

B.Practical Implications

Our research gives new ways through which stress impacts performance via emotional contagion. Organisations may take cues from this and make strategies to promote healthy emotional contagion and curb negative contagion to enhance performance. Past research has shown the effect of emotional contagion on performance. Interventions can be devised to reduce stress and promote a healthy work environment conducive to improved performance.

Limitations and Future Research

The findings of the research can be applied keeping in mind the following limitations. Designation-wise or role-wise data was not collected. This was also one of the constraints of this research. Though the sample size for this study was appropriate, more respondents might be needed for an in-depth industry-wise research.

With the advancement in technology, workplace dynamics are also changing. Virtual workplaces and contractual job assignments are gaining ground. Thus, future researchers might look into this aspect. The

impact of emotional contagion on blue collared workers could be an interesting area of study. In this study, only real time responses were recorded. Future research might look into a longitudinal study to assess the impact of time leading to changes in emotional responses.

Conclusion

The main objective of this research was to understand the mediation effect of emotional contagion on stress-performance relationship and evaluate the gender perspective on this. A thorough literature review was

done and responses across various industries were analysed using the structural equation modelling and multi-group analysis. This study developed and examined a framework for mediation analysis of emotional contagion based on the gaps identified from the review of literature. Overall, the research reveals sound support for the theoretical model elucidating the causal effect of emotional contagion. The gender aspect was also well covered. The key insights derived from this study are not only limited to India but are also generalizable to developing nations, North America and Europe as well.

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