Defence Life Science Journal, Vol. 10, No. 1, January 2025, pp. 47-56, DOI : 10.14429/dlsj.20090

The Role of Mindfulness on The Relationship Between Personality Factors and Cognitive Failures: A Mediation Study

Nivedita D.[$], D. Ravi[#,*], Shatarupa Chakraborty[~] Sneha Bharaty[!], Devika Mohan[#] and Selvapriya M[#]
[$]*Bharathiar University, Coimbatore, Tamil Nadu - 641 046, India.*
[#]*DRDO-Defence Institute of Psychological Research (DIPR), Timarpur, Delhi - 110 054, India.*
[~] *Indira Gandhi Indoor Stadium, ITO, Near Rajghat, New Delhi - 110 002 India.*
[!]*Asutosh College, Kolkata University, West Bengal - 700 026 India.*
[*]*Email: dravi.dipr@gov.in*

ABSTRACT

Cognitive failures such as minor lapses in perception, memory and action are common in daily life. Several factors including personality and mindfulness are instrumental in bringing about individual differences in cognitive failures. Personality factors might be indicative of these slips. The present research aims at exploring the association between personality factors and cognitive failures, and the mediating role of mindfulness. The sample consisted of 419 participants between the age range of 18 to 74years (M= 29.06 years, SD = 12.55) and were assessed on personality factors, cognitive failures and mindfulness. Findings from hierarchical regression analysis suggest that the personality factors and mindfulness account for 29.2 % of variance in cognitive failures. On the other hand, mediation analysis of mindfulness on the relationship between personality factors and cognitive failures suggest that mindfulness is a partial mediator for the relationship between extraversion and cognitive failures; and a complete mediator for the relationship between neuroticism and cognitive failures. This study has attempted to further the understanding of the interactions between personality traits and mindfulness, and their consequent impact on cognitive failures in the adult Indian population.

Keywords: Cognitive failures; Mindfulness; Psychoticism; Extraversion; Neuroticism; Mind wandering

1. INTRODUCTION

Cognitive failure, a prevalent phenomenon in our routine tasks[1], is defined as the general lapses in perception, memory and action[2]. The frequency of cognitive failures differs from person to person, with some people being more vulnerable to these slips than others[3], which may, to some extent be explained by genes[4,5], the structure of the brain[6,7] , lifestyle[8], poor sleep quality and low mood[9,10].

Certain types of personality also make an individual susceptible to cognitive failures. It was [11]found that the personality profile of a person prone to cognitive failures would have higher levels of self-consciousness and anxiety, as its major components with self-consciousness partially mediating the positive relationship between Cognitive Failure Questionnaire (CFQ) scores and anxiety. It was pointed out[12] that cognitive failures played an essential role in individual safety behaviour, especially when conscientiousness was low. It was also observed that cognitive failures were associated with high level of self-directedness trait[13].

However, various factors have been identified to aid in reducing the frequency of cognitive failures among individuals. Stress management interventions[14], mindfulness-based interventions[15], workplace flexitime[16] etc, have been effective in reducing cognitive failures. Higher degrees of neuroticism and cognitive failures scores were significantly associated with lower self-reported mindfulness scores, indicating that mindfulness may be a useful tactic to mitigate the negative impact of neuroticism on cognitive failures.[17,18].

Links have also been established between personality traits and mindfulness. For instance, a study was conducted[19] that aimed at extending the understanding of the relationship between mindfulness and personality trait (conscientiousness) on a sample of 458 individuals using the Sustained Attention to Response Task (SART) framework for mindfulness[20]. The self-regulation was found to be positively associated to openness, negatively associated with neuroticism and positively associated with conscientiousness, and "conscientious confusion" cluster, showed a mixed relationship between conscientiousness and mindful self-regulation. This suggests that people will be able to participate with daily life more fully the more dispositional mindfulness they possess.

The self-regulation cluster implies that mindful tendencies help in adaptive regulation of behavior and thoughts, which allow for improved participation in pursuits and activities that are more in line with one's own ideals, which in turn promote greater psychological well-being, consequently explaining the inconsistency

Received : 12 April 2024, Revised : 16 October 2024
Accepted : 28 October 2024, Online published : 24 December 2024

with negative emotionality. Mindfulness was negatively related to neuroticism and positively to conscientiousness[21].

In essence, personality traits of the individuals can be used to infer about their characteristic thoughts, feelings and behaviors. Possessing certain personality traits can make a person vulnerable to cognitive failures[22] which are general lapses or failures in perception, memory and action[2]. These errors, though very common in everyday life, can have dire consequences like dangers to patient safety[23] and automobile accidents[22]. Though dispositional mindfulness has emerged as an important factor that can account for the individual differences in the occurrence of cognitive failures[24,25], the paucity of research conducted on how mindfulness affects the relationship between personality traits and cognitive failures, especially for Indian population, warrants the present research. In order to address the gap in the current literature, the following hypotheses were formulated:

- **H1** There will be significant relationships among mindfulness, personality factors and cognitive failures.
- **H2** Mindfulness will mediate the relationship between personality factors and cognitive failures.
- **H2a** Mindfulness will mediate the relationship between extraversion and cognitive failures.
- **H2b** Mindfulness will mediate the relationship between neuroticism and cognitive failures.
- **H2c** Mindfulness will mediate the relationship between psychoticism and cognitive failures.

2. MATERIALS AND METHODS

2.1 Participants

The sample was drawn using the snowball sampling method, from the adult Indian population. The online survey link was circulated amongst the participants. The sample constituted 419 participants (M= 29.06 years, S.D.= 12.55), of which 167 were males (M= 33.22 years, S.D.= 10.06) and 252 were females (M= 26.32 years, S.D.= 14.66). Nearly 57 % of the participants had an educational qualification of post-graduation and beyond. About 49 % of the participants were students, followed by 30 % employees, 9 % self-employed, 7 % research scholars, 4 % unemployed and 2 % retired. The majority of the participants reside in urban areas (about 69 %), followed by 20 % in semi urban and 11% in rural areas. A vast majority of the participants were unmarried (69 %), followed by married (31 %) and separated individuals (0.24 %).

2.2 Procedure

The data was collected using snowball sampling technique. The responses of the participants were collected through an online mode consisting of three questionnaires chosen for the present study. The general background and purpose of the study was conveyed to the participants, along with a general set of instructions. Terms of informed consent were specified appropriately. The basic demographic details of the participant were also collected: age, gender, educational qualification, designation, area of dwelling and marital status. A general set of instructions was also provided to aid the participants in recording their responses wherein participants were asked to read the items carefully and select one of the various given options pertaining to them, by checking the box of the preferred response. The survey could be completed in within duration of 20-30 minutes. The contact details of the researcher were also provided in case of requirement of a clarification. 426 participants filled the questionnaire forms, and after eliminating responses with missing data, 419 of these were found to be eligible.

2.3 Measures

2.3.1 Personality

Eysenck's Personality Questionnaire-Revised (Short Form) (EPQR-S)[26] was used to assess personality traits. It consists of 48 dichotomous items which are responded to as Yes/No, divided into 4 subscales: Neuroticism, Extraversion, Psychoticism and Lie scale. Each subscale has 12 items. The Lie Scale is used to determine the reliability of the responses given by the participants. Cronbach's alpha for psychoticism, extraversion and neuroticism scales were respectively 0.398, 0.746 and 0.808. The responses "Yes" and "No", scores of 1 and 0 are assigned respectively. There is a total of 18 negatively worded items, for which reverse scoring is used: 2, 6, 8, 12, 18, 20, 24, 26, 27, 28, 29, 33, 35, 37, 40, 41, 43 and 47. For these items, scores of 0 and 1 are assigned respectively for the responses of "No" and "Yes". The score range for each dimension is 0-12. The highest score in any of the three subscales of Neuroticism, Extraversion and Psychoticism indicate that the person is dominant in that personality trait.

2.3.1 Cognitive Failures

The Cognitive Failures Questionnaire (CFQ) has 25 items and yields a single score[2]. The Cronbach alpha was determined to be 0.904. A 5-point Likert scale, ranging from 0-Never to 4-Very often, is used to record responses. The range of scores is 0 to 100. Higher scores indicate more cognitive failures.

2.3.2 Mindfulness

The Five Facet Mindfulness Questionnaire (FFMQ) is a 39-item scale used to assess mindfulness[27]. The facets were also found to be moderately inter-correlated[28], and alpha coefficients ranged from 0.73 (non-reactivity) to 0.91 (describing), which sufficiently indicated internal consistency. Cronbach's alpha was determined to be 0.822. Participants are asked to answer on a five-point Likert scale, where 1 represents never or extremely rarely true and 5 represents very often or always true. Nineteen negatively phrased, reverse-scored items total. The scale goes from 39 to 195, where higher numbers correspond to more mindfulness.

3. RESULTS

The purpose of the current study was to investigate how mindfulness may mediate the association between personality traits and cognitive failures.

As seen in Table 1, the mean value of psychoticism is 3.49 (SD= 1.735), extraversion is 7.45 (SD= 2.860), neuroticism is 5.84 (SD= 3.279), mindfulness is 126.09 (SD= 15.838) and cognitive failures is 36.71 (SD= 14.867).

Table 1. Average (Mean) and standard deviation(SD) for the variables (N=419)

Variables	Average (Mean)	SD
Psychoticism	3.49	1.735
Extraversion	7.45	2.860
Neuroticism	5.84	3.279
Mindfulness	126.09	15.838
Cognitive failures	36.71	14.867

Table 2 depicts the Pearson product moment correlations between the variables of study. Neuroticism exhibits the strongest positive association with cognitive failure, meaning that people high on neuroticism tend to experience higher frequency of cognitive failures. This is in line with the previous literature[29-33]. Mindfulness has the strongest negative association with neuroticism, indicating that people with higher levels of mindfulness tend to have lower levels of neuroticism. This is in congruence with previous studies[34-38]. Cognitive failures and mindfulness also exhibit the strongest negative association, implying that people experiencing higher frequency of cognitive failures tend to have lower levels of mindfulness[24-25,39-41]. Psychoticism and cognitive failures were found to be significantly positively correlated, but a weak correlation ($r=0.144$, $p<0.001$). Result thus implied that people reporting higher levels of cognitive failures are likely to report higher levels of psychoticism as well, and vice versa. Significant correlation was also found between cognitive failures and psychoticism[30]. However, contrary to the present finding[42], no significant correlation between psychoticism and cognitive failures was found. The variations in the sample characteristics, notably the nationality, cultural differences, sample size and age, could be the cause of these discrepancies in the results.

Hierarchical linear regression was performed for evaluating how much the personality traits could explain the variation produced in cognitive failures. It was also explored as to how much more could mindfulness contribute to this variation. The Table 3 shows the summary of the output of the hierarchical linear regression. For the first block analysis, all the three predictor variables of psychoticism, extraversion and neuroticism were utilized. The results of the analysis revealed a statistically significant model labelled as Model 1 ($p<0.001$). The R^2 value of 0.208 associated with this regression model revealed that the three predictor variables of psychoticism, extraversion and neuroticism explained 20.8 % of the variance in cognitive failures with $F(3, 415)= 36.387$, $p<0.001$, while the rest 79.2 % of the variation may not be explained by these predictor variables. The findings showed that psychoticism positively predicted cognitive failures ($\beta= 0.164$, $p=0.001$), extraversion negatively predicted cognitive failures ($\beta= -0.098$, $p<0.05$) and neuroticism positively predicted cognitive failures ($\beta= 0.398$, $p<0.001$). A slightly different outcome was observed from the second block analysis.

For the second block analysis, mindfulness was also added as a predictor. The results of this analysis also revealed a statistically significant model. The R^2 value of 0.292 associated with this regression model, labelled as Model 2, revealed that the personality traits acting as predictors: psychoticism, extraversion and neuroticism, along with mindfulness significantly explained 29.2 % of the variance in cognitive failures, with $F (1, 414) = 49.111$, $p<0.001$. The findings revealed that the psychoticism positively predicted cognitive failures ($\beta= 0.143$, $p= 0.001$) and neuroticism also positively predicted cognitive failures ($\beta= 0.250$, $p<0.001$) along with mindfulness ($\beta= -0.355$, $p<0.001$), which negatively predicted cognitive failures. However, extraversion did not predict cognitive failures ($\beta= -0.046$, $p= 0.291$). The $\Delta R2$ value of 0.084 explained 8.4 % variance of Model 1 and Model 2 with $\Delta F (3, 414)= -12.724$, $p<0.001$. The regression weights for personality traits differed subsequently from Model 1 to Model 2: for psychoticism, it reduced from 0.164 to 0.143 ($p<0.05$), for extraversion, reduced from 0.235 to 0.226 ($p= 0.001$) and for neuroticism, reduced from 0.398 to 0.250 ($p<0.001$).

Hence, the results of hierarchical linear regression demonstrated that though personality traits could explain the variation produced in cognitive failures to a certain extent, including mindfulness as a predictor in this model could better account for the variation produced in cognitive failures, thereby accounting for hypothesis 1.

Table 2. Pearson product moment correlations

Variables	Psychoticism	Extraversion	Neuroticism	Mindfulness	Cognitive failure
Psychoticism	1				
Extraversion	0.035	1			
Neuroticism	-0.041	-0.254**	1		
Mindfulness	-0.039	0.266**	-0.477**	1	
Cognitive failures	0.144**	-0.193**	0.416**	-0.473**	1

Note: **p<0.001.

Table 3. Summary of hierarchical linear regression for the effect of mindfulness and personality traits on cognitive failures

Model	Variables	B	95% C.I.	SE B	B	R^2	ΔR^2
1	Constant	25.073**	[19.632, 30.513]	2.768		0.208	0.208**
	Extraversion	-0.511*	[-0.973, -0.050]	0.235	-0.098	0.037	0.037**
	Neuroticism	1.804**	[1.401, 2.207]	0.205	0.398	0.173	0.173**
	Psychoticism	1.407**	[0.671, 2.144]	0.375	0.164	0.021	0.021*
2	Constant	62.273**	[54.364, 80.182]	6.567		0.292	0.084**
	Psychoticism	1.227**	[.528, 1.926]	0.356	0.143	0.021	0.021*
	Extraversion	-0.239 (p= 0.291)	[-0.682, 0.205]	0.226	-0.046	0.037	0.037**
	Neuroticism	1.135**	[0.710, 1.560]	0.216	0.250	0.173	0.173**
	Mindfulness	-0.315**	[-0.403, -0.227]	0.045	-0.335	0.223	0.223**

Note: **p<0.001.

To have a deeper comprehension of how mindfulness affects the relationship between extraversion and neuroticism separately in relation to cognitive failures, Model 4 of PROCESS Macro by Andrew Hayes was used in association with SPSS, which aids in analysing simple mediation models with a single predictor variable, mediating variable and outcome variable. Two models were examined for the mediation analysis, the first one with extraversion and the second one with neuroticism as predictors of cognitive failures, with mindfulness as the mediator. Since statistically significant associations between psychoticism and cognitive failures were not found, mediation analysis was not conducted on that factor (Refer to Tables 5-9 for relevant values and Fig. 1 and 2 for mediation models).

According to the extraversion mediation model (Fig. 1), extraversion does not directly cause cognitive failure, but it does have an indirect effect through mindfulness, suggesting that mindfulness serves as a full mediator between extraversion and cognitive failures. Table 4 shows the direct and indirect impacts of extraversion on cognitive failures.

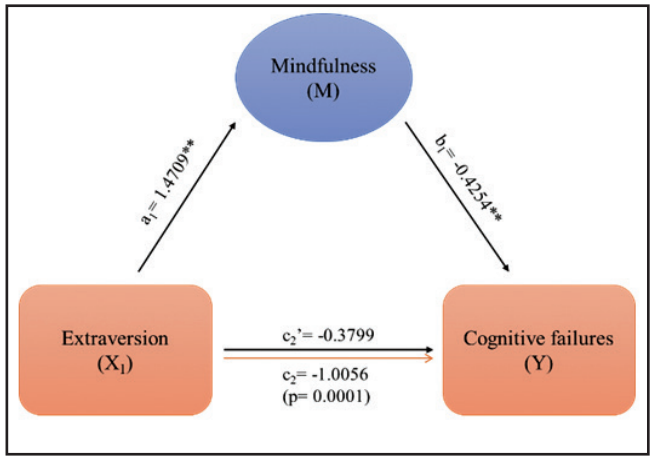

Figure 1. Mediation model for extraversion.

Note: **p<0.001. a_1= Direct effect of Extraversion on Mindfulness. b_1= Direct effect of Mindfulness on Cognitive Failures. C_2'= Direct effect of Extraversion on Cognitive Failures. C_2= Total effect of extraversion on Cognitive Failures.

To examine the direct effect of extraversion on mindfulness, extraversion was considered as the predictor variable and mindfulness as the outcome variable (Refer to Table 4). It was observed that extraversion was a predictor of mindfulness (b= 1.4709, s.e.= 0.2614, p< 0.001), therefore, extraversion was considered to have a direct effect on mindfulness within the path model. Mindfulness was also observed to be a significant predictor of cognitive failures (b= -0.4254, s.e.= 0.0419, p<0.001), by virtue of it having a direct effect on cognitive failures. Extraversion was not found to be a significant predictor of cognitive failure (b= -0.3799, s.e.= 0.2322, p= 0.1026), implying that extraversion did not have a direct effect on cognitive failures.

To calculate the indirect impact of extraversion on cognitive failures through mindfulness, extraversion is considered the predictor variable, cognitive failures the outcome, and mindfulness the mediator. Extraversion was found to have an unstandardised indirect effect on cognitive failures that was statistically significant [Effect= -0.6257, 95 % C.I. (-0.8811, -0.3984)]. Using bootstrap standard errors and confidence levels, the standardised indirect effect of extraversion on cognitive failures was examined for a sample size of 5000. Additionally, it was discovered that extraversion's fully standardised indirect effect on cognitive failures was statistically significant [Effect= -0.1204, 95 % C.I. (-0.1692, -0.0769)]. Therefore, extraversion uses mindfulness to indirectly affect cognitive failures.

Additionally, extraversion's direct impact on cognitive failure is coupled with its indirect impact through mindfulness, which was found to be -1.0056, to get the overall impact of extraversion on cognitive failures through mindfulness. Given that extraversion has no direct impact on cognitive failure but rather indirectly through mindfulness, it may be said that mindfulness acts as a complete mediator in the relationship between extraversion and cognitive failures.

Hence, pertaining to hypothesis 2a, it was found that mindfulness fully mediates the relationship between

Table 4. Mediation analysis for extraversion

Path	Direct effect of X_1 on M- (a_1)	Direct effect of M on Y- (b_1)	Direct effect of X_1 on Y (c'_1)	Total effect of X_1 on Y (c_1)
Extraversion(X_1)-> Mindfulness(M)-> Cognitive failures(Y)	1.4709**	-0.4254**	-0.3799 (p= 0.1026)	-1.0056 (p= 0.0001)

Note: **p<0.001.

extraversion and cognitive failures. This implies that the mechanism by which extraversion predicts cognitive failures can be completely explained by mindfulness. In other words, the effect of extraversion is completely transmitted to cognitive failures through mindfulness. People who are extraverted tend to be gregarious, expansive, lively, fun-oriented, interested in other people, and have a tendency to feel good about themselves.[43,44]. Two major characteristics of being mindful is being able to engage non-judgementally with both external and internal environments and being able to share and articulate/describe one's experiences with others, devoid of inhibitions. Hence, this can explain why extraversion may predict higher levels of mindfulness. Though significant but weak negative correlation was observed between extraversion and cognitive failure, extraversion could not be directly established as being the causal factor of cognitive failures, as shown by the path analysis in mediation.

The mediation model for neuroticism (Fig. 2) shows that neuroticism has both direct and indirect effect on cognitive failure (through mindfulness), which implies shows that the association between neuroticism and cognitive failures is partially mediated by mindfulness.. The direct and indirect effects of neuroticism on cognitive failures are depicted in Table 5. (Refer to tables 6, 7 and 8 for the direct effects, completely standardized indirect effects and total effects of extraversion and neuroticism).

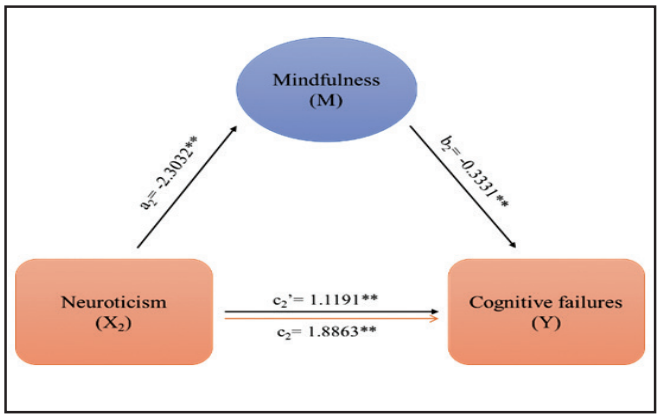

Figure 2. Mediation model for neuroticism.

Note: ****p<0.001. a_2= Direct effect of Neuroticism on Mindfulness. b_2= Direct effect of Mindfulness on Cognitive Failures. c_2'= Direct effect of Neuroticism on Cognitive Failures. c_2= Total effect of Neuroticism on Cognitive Failures.**

Table 5. Mediation analysis table for neuroticism

Path	Direct effect of X_2 on M- (a_2)	Direct effect of M on Y- (b_2)	Direct effect of X_2 on Y (c_2')	Total effect of X_2 on Y (c_2)
Neuroticism->Mindfulness->Cognitive failures	-2.3032**	-0.3331**	1.1191**	1.8863**

Note: **p<0.001.

Table 6. Direct effect of predictor on the outcome variable

Predictor variable	Effect	S.E.	t	p	LLCI	ULCI
Extra-version	-0.3799	0.2322	-1.6358	0.1026	-0.8363	0.0766
Neuro-ticism	1.1191	0.2160	5.1802	0.0000	0.6944	1.5473

Table 7. Completely standardized indirect effect of predictor on outcome variable, through mediator

Predictor variable	Effect	BootS.E.	BootLLCI	BootULCI
Extraversion	-0.1204	0.0233	-0.1692	-0.0769
Neuroticism	0.1692	0.0262	0.1198	0.2231

Table 8. Total effect of predictor on the outcome variable

Predictor variable	Effect	S.E.	t	p	LLCI	ULCI
Extra-version	-1.0056	0.2497	-4.0265	0.0001	-1.4965	-0.5147
Neuro-ticism	1.8863	0.2019	9.3424	0.0000	1.4894	2.2832

Neuroticism was found to have a direct effect on mindfulness within the path model (b= -2.2032, s.e.= 0.2079, p< 0.001). It was also observed that mindfulness (b= -0.3331, s.e.= 0.0447, p<0.001) was a significant predictor of cognitive failures. Hence, it was discovered that cognitive failures were directly impacted by mindfulness. Neuroticism is the predictor variable, cognitive failures

are the result, and mindfulness is the mediator variable in order to compute the indirect relationship between neuroticism and cognitive failures through mindfulness. The unstandardised indirect effect of neuroticism on cognitive failures was found to be statistically significant [Effect= 0.7672, 95 % C.I. (0.5362, 1.0229)]. The standardized indirect effect of neuroticism on cognitive failures was tested using bootstrap standard errors and confidence levels, for a sample size of 5000. The completely standardized indirect effect of neuroticism on cognitive failures was also found to be statistically significant [Effect= 0.1692, 95 % C.I. (0.1198, 0.2231)]. Hence, neuroticism has an indirect effect on cognitive failures via mindfulness.

Hence, pertaining to hypothesis 2b, it was found that mindfulness partially mediates the relationship between neuroticism and cognitive failures. Neuroticism emerges as one of the most commonly explored personality trait with cognitive failures. Nervousness, emotional instability, moodiness, tension, irritability, propensity to worry, anxiety, sadness, and anger are traits of people with high degrees of neuroticism[42,43].

4. DISCUSSION

This study aimed to investigate how mindfulness influences personality traits and cognitive failures. The relationship between extraversion and cognitive failures was fully mediated by mindfulness, while the relationship between neuroticism and cognitive failures was partially mediated by mindfulness.

Extraverted people are characterized as sociabile, expansive, lively, fun and interested in other people[43] along with a propensity to experience positive affect[44]. Two major characteristics of being mindful is being able to engage non-judgementally with both external and internal environments and being able to share and articulate/describe one's experiences with others, devoid of inhibitions. Hence, this can explain why extraversion may predict higher levels of mindfulness. Though a significant weak negative correlation was observed between extraversion and cognitive failure, extraversion could not be directly established as being the causal factor of cognitive failures, as shown by the path analysis in mediation.

However, it has been reported that people having higher levels of assertiveness, excitement-seeking and cheerfulness, meaning, those high on extraversion tend to be more inclined towards engaging in social situations that are complex, which in turn keep them involved with cognitively rich activities[45], that consequently support their cognitive functioning and guard them against cognitive failures[46]. Also, extraverted individuals may be biased in self-reporting cognitive failures, owing to their greater self-efficacy and positive evaluations they have about their lives[47].

Moreover, people who are disposed to be mindful are capable of "paying and maintaining attention to present-moment experiences with an open and non-judgemental attitude"[48], thereby enabling extraverts to accurately report the cognitive failures they experience in daily life. The result could also be explained by two-factor model theory of mindfulness[49]and the cognitive model of mindfulness[50] which explain that high mindfulness individuals are able to focus more and make the correct decisions as they are more open and have receptive attitude toward the feelings and experiences of the present.[51,52]. This explains the full mediation model for extraversion that has emerged through this study.

The present study also established that mindfulness acted as a partial mediator for the relationship between neuroticism and cognitive failures. Neuroticism emerges as one of the most commonly explored personality trait with cognitive failures. Individuals having high levels of neuroticism may be more likely to ruminate (repetitively think about the same issue), which may consequently distract them from the on-going behaviour and action[53]. It was also reported that with low level of mindfulness, neuroticism predicts increase in cognitive failures, whereas for average and high mindfulness, it predicts decrease in cognitive failure[18]. Similar impact of mindfulness (dispositional) was reported for executive functioning[54].

Furthermore, high neuroticism has been linked with poor sleep[55], leading to daytime sleepiness that may ultimately be instrumental in impairing mental processes, resulting in cognitive failures. In addition to this, people having higher levels of neuroticism may tend to be more critical of themselves and their cognitive functioning[56,57]. Moreover, it[58] also showed higher neuroticism to be linked with more real-time cognitive failures. This sufficiently explains why neuroticism is capable of predicting cognitive failures.

Mindfulness, however, endows a person with clarity of mind, which is helpful in enhancing self-regulation and mental health[59]. Hence, it can be safely concluded that mindfulness is capable of acting as a protective factor against the consequences of negative emotional reactivity that is characteristic of neuroticism[60]. These concepts can also be explained by the two-factor model of mindfulness[48] and the cognitive model of mindfulness[50]. This clarifies how neuroticism indirectly contributes to cognitive deficits through mindfulness.

5. CONCLUSIONS

Mindfulness based interventions can be implemented to help elevate trait/dispositional mindfulness, ultimately mediating the interaction between personality traits and cognitive failures. Organizations and academicians could hence incorporate mindfulness in their general working culture and curriculum respectively as an effective way to reduce the incidences of cognitive failures, consequently leading to potential improvements in performance in various aspects along with reductions in stress and accidents.

The present study will help pioneer the understanding of the relationships among personality traits, mindfulness and cognitive failures in Indian settings. People in a variety of settings have been interested in minimizing accidents

and harms, and consequently improving performance in all domains of life. Since cognitive failure is one of the reasons that can lead to potentially fatal accidents, it has become crucial to understand its nuances in connection with individual differences, fundamentally, with personality. Through our study, it was found that mindfulness could fully mediate the relationship between extraversion and cognitive failures, while it could only partially mediate the relationship between neuroticism and cognitive failures.

This study has attempted to further the understanding of the interactions between personality traits and mindfulness, and their consequent impact on cognitive failures in the adult Indian population. The potentially negative consequences of cognitive failures may be reduced by improving mindfulness, which is a trainable and improvable construct, as being mindful has a multitude of benefits in a variety of situations, from reducing workplace accidents to enhancement in general wellbeing[61]. Reduced susceptibility to minor lapses of attention can benefit people from all walks of life.

The relationship between the personality trait of psychoticism and mindfulness needs to be explored further. Future research on similar lines may be conducted with a larger sample size. Moreover, racially diverse samples may be used to explore if the findings of the present study can be replicated. Replicating this study on more specific samples may aid in understanding the nuances of such relationships on those samples. Further, the outcomes of mindfulness training should be explored as a way of reducing cognitive failures, which can be of potential benefit to the community at large.

Despite uncovering important insights, this research study has its own limitations. First, survey research design of the study may be unable to rule out extraneous variables. Second, the relatively small sample size may not be capable of representing the adult population in India. Third, the sample was racially homogeneous. Fourth, since all the measures used were self-report questionnaires, there is a high chance of subjective bias emerging in the responses of the participants. Fifth, despite the usage of well validated measures, survey fatigue may have influenced the responses of the participants since the survey form was quite lengthy.

REFERENCES

1. Clark, A.J.; Parakh, R.; Smilek, D. & Roy, E. A. The slip induction task: Creating a window into cognitive control failures. *BehaV. Res. Methods,* 2011*,* **44**(2), 558–574. doi: 10.3758/s13428-011-0154-0
2. Broadbent, D.E.; Cooper, P.F.; FitzGerald, P. & Parkes, K.R. The cognitive failures questionnaire (CFQ) and its correlates. *Br. J. Clin. Psychol,* 1982*,* **21**(1), 1-16. doi: 10.1111/j.2044-8260.1982.tb01421.x
3. Unsworth, N.; Brewer, G.A. & Spillers, G.J. Variation in cognitive failures: An individual differences investigation of everyday attention and memory failures. *J. Mem. Lang,* 2012*,* **67**, 1–16. doi: 10.1016/j.jml.2011.12.005
4. Boomsma, D.I. Genetic analysis of cognitive failures (CFQ): A study of dutch adolescent twins and their parents. *Euro. J. Pers.,* 1998, **12**(5), 321-330. doi: 10.1002/(SICI)1099-0984(1998090)12:5<321::AID-PER334>3.0.CO;2-5
5. Markett, S.; Montag, C.; Diekmann, C. & Reuter, M. Dazed and confused: A molecular genetic approach to everyday cognitive failure. *Neurosci. letters, 2014,* **566**, 216-220.https://www.sciencedirect.com/science/article/abs/pii/S0304394014001566 (Accessed on 16 September 2024)
6. Kanai, R.; Dong, M.Y.; Bahrami, B. & Rees, G. Distractibility in daily life is reflected in the structure and function of human parietal cortex. *J. Neurosci.,* 2011*,* **31**(18), 6620–6626. doi: 10.1523/JNEUROSCI.5864-10.2011
7. Bey, K.; Montag, C.; Reuter, M.; Weber, B. & Markett, S. Susceptibility to everyday cognitive failure is reflected in functional network interactions in the resting brain. *NeuroImage,* 2015, **121**, 1-9. doi:10.1016/j.neuroimage.2015.07.041
8. Dzubur, A.; Koso-Drljevic, M. & Lisica, D. Understanding cognitive failures through psychosocial variables in daily life of students. *J. Evol. Med. Dent. Sci.,* 2020, **9**(45), 3382-3387. doi:10.14260/jemds/2020/743
9. Wilkerson, A.; Boals, A. & Taylor, D.J. Sharpening our understanding of the consequences of insomnia: The relationship between insomnia and everyday cognitive failures. *Cogn. Ther. Res.,* 2012, **36**(2), 134-139. doi: 10.1007/s10608-011-9418-3
10. Payne, T.W. & Schnapp, M.A. The relationship between negative affect and reported cognitive failures. *Dep. Res. Treat,* 2014, 396195. doi: 10.1155/2014/396195
11. Matthews, G. & Wells, A. Relationships between anxiety, self-consciousness, and cognitive failure. *Cogn. Emo.,* 1998, **2**(2), 123-132. doi: 10.1080/02699938808408069
12. Wallace, J.C. & Vodanovich, S.J. Workplace safety performance: Conscientiousness, cognitive failure, and their interaction. *J. Occup. Health Psychol,* 2003*,* **8**(4), 316. doi: 10.1037/1076-8998.8.4.316
13. Markett, S.; Reuter, M.; Sindermann, C. & Montag, C. Cognitive failure susceptibility and personality: Self-directedness predicts everyday cognitive failure. *Pers. Individ. Dif.,* 2020*, 159*, 109916. doi: 10.1016/j.paid.2020.109916
14. Willert, M.V.; Thulstrup, A.M.; Hertz, J. & Bonde, J.P. Sleep and cognitive failures improved by a three-month stress management intervention. *Int. J. Stress Manag,* 2010*,* **17**(3), 193-213. doi: 10.1037/a0019612

15. Kearney, D.J.; Simpson, T.L.; Malte, C.A.; Felleman, B.; Martinez, M.E. & Hunt, S.C. Mindfulness-based stress reduction in addition to usual care is associated with improvements in pain, fatigue, and cognitive failures among veterans with gulf war illness. *The Am. J. Med.,* 2016, **129**(2), 204-214. doi: 10.1016/j.amjmed.2015.09.015
16. Hsu, Y.S.; Chen, Y.P. & Shaffer, M.A. Reducing work and home cognitive failures: The roles of workplace flextime use and perceived control. *J. Bu.s Psychol.,* 2021**, 36**(1), 155-172. doi: 10.1007/s10869-019-09673-4
17. Kondracki, A.J.; Riedel, M.C.; Crooks, K.; Perez, P.V.; Flannery, J.S.; Laird, A.R. & Sutherland, M.T. The link between neuroticism and everyday cognitive failures is mediated by self-reported mindfulness among college students. *Psychol. Rep.,* 2021. doi: 10.1177/00332941211048467
18. Hooda, K.D. & Sharma, N. Cognitive failure in relation to personality: Analyzing the moderating role of mindfulness. *J. Ind. Acad. Appd. Psychol.*, 2023, **49**(2), 174-83. https://jiaap.in/wp-content/uploads/2023/06/2_Kalpnaa.pdf (Accessed on 12 August 2024)
19. Hanley, A.W. The mindful personality: Associations between dispositional mindfulness and the five factor model of personality. *Pers. Individ. Dif.,* 2016, ***91***, 154-158. doi: 10.1016/j.paid.2015.11.054
20. Vago, D.R. & Silbersweig, D.A. Self-awareness, self-regulation, and self-transcendence (S-ART): A framework for understanding the neurobiological mechanisms of mindfulness. *Front Hum. Neurosci.,* 2012, **6**(296), 1–30. doi: 10.3389/fnhum.2012.00296
21. Latzman, R.D. & Masuda, A. Examining mindfulness and psychological inflexibility within the framework of big five personality. *Pers. Individ. Dif.,* 2013*,* ***55***(2), 129-134. doi: 10.1016/j.paid.2013.02.019
22. Wallace, J.C. & Vodanovich, S.J. Workplace safety performance: Conscientiousness, cognitive failure, and their interaction. *J. Occup. Health Psychol.,* 2003*,* **8**(4), 316._ doi: 10.1037/1076-8998.8.4.316
23. Park, Y.M. & Kim, S.Y. Impacts of job stress and cognitive failure on patient safety incidents among hospital nurses. *Saf. Health Work,* 2013, **4**(4), 210-215. doi: 10.1016/j.shaw.2013.10.003
24. Ahadi, B.; Mehrinejad, A. & Moradi, F. Cognitive failure in the elderly: The role of mindfulness and meta-emotion. *Aging Psychol,* 2017, **3**(2), 115-125. https://www.sid.ir/en/journal/ViewPaper.aspx?id=572539 (Accessed on 12 August 2024)
25. Singh, S. & Sharma, N.R. Study of mindfulness and cognitive failure among young adults. *Ind. J. Posv. Psychol.,* 2017*,* **8**(3), 415.https://www.i-scholar.in/index.php/ijpp/article/view/162010 (Accessed on 9 September 2024)
26. Barrett P.T.; Petrides K.V.; Eysenck, S.B. & Eysenck, H.J. The eysenck personality questionnaire: An examination of factorial similarity of P, E, N, and L, across 34 countries. *Pers. Individ. Dif.* 1998, **25**(5), 805-19. doi: 10.1016/S0191-8869(98)00026-9
27. Baer, R.A.; Smith, G.T.; Hopkins, J.; Krietemeyer, J. & Toney, L. Using self-report assessment methods to explore facets of mindfulness. *Assess,* 2006, **13**(1), 27-45. doi: 10.1177/1073191105283504
28. Bohlmeijer, E.; Ten Klooster, P.M.; Fledderus, M.; Veehof, M. & Baer, R. Psychometric properties of the five facet mindfulness questionnaire in depressed adults and development of a short form. *Assess,* 2011, **18**(3), 308-320. doi: 10.1177/1073191111408231
29. Ponds, R.W. & Jolles, J. Memory complaints in elderly people: The role of memory abilities, metamemory, depression, and personality. *Edu. Geron: An Intern Quat,* 1996, **22**(4), 341-357. doi: 10.1080/0360127960220404
30. Flehmig, H.C.; Steinborn, M.; Langner, R. & Westhoff, K. Neuroticism and the mental noise hypothesis: Relationships to lapses of attention and slips of action in everyday life. *Psychol Sci.,* 2007, **49**(4), 343-360. https://psycnet.apa.org/record/2008-02884-004 (Accessed on 5 October 2024)
31. Elfering, A.; Grebner, S. & de Tribolet-Hardy, F. The long arm of time pressure at work: Cognitive failure and commuting near-accidents. *Euro. J. Work Organ Psychol,* 2013, **22**(6), 737-749.https://www.tandfonline.com/doi/abs/10.1080/1359432X.2012.704155 (Accessed on 5 October 2024)
32. Williams, P.G.; Rau, H.K.; Suchy, Y.; Thorgusen, S.R. & Smith, T.W. On the validity of self-report assessment of cognitive abilities: Attentional control scale associations with cognitive performance, emotional adjustment and personality. *Psychol Assess,* 2017, **29**(5), 519–530. doi: 10.1037/pas0000361
33. Könen, T. & Karbach, J. Self-reported cognitive failures in everyday life: A closer look at their relation to personality and cognitive performance. *Assess,* 2018, **27**, 982-995. doi: 10.1177/1073191118786800
34. Iani, L.; Lauriola, M.; Cafaro, V. & Didonna, F. Dimensions of mindfulness and their relations with psychological well-being and neuroticism. *Mindful,* 2017, **8**(3), 664-676. doi: 10.1007/s12671-016-0645-2
35. Polizzi, C.; Gautam, A. & Lynn, S.J. Trait mindfulness: A multifaceted evaluation. *Imagin Cogn. Pers.,* 2018, **38**(2), 106-138. doi: 10.1177/0276236618774321

36. Elliot, A.J.; Gallegos, A.M.; Moynihan, J.A. & Chapman, B.P. Associations of mindfulness with depressive symptoms and well-being in older adults: The moderating role of neuroticism. *Aging Ment. Health,* 2019, **23**(4), 455-460.
doi: 10.1080/13607863.2017.1423027
37. Haliwa, I.; Lee, J.; Wilson, J. & Shook, N.J. Mindfulness and engagement in COVID-19 preventive behavior. *Prev. Med. Rep.,* 2020, **20**, 101246.
doi: 10.1016/j.pmedr.2020.101246
38. Haliwa, I.; Wilson, J.M.; Spears, S.K.; Strough, J. & Shook, N.J. Exploring facets of the mindful personality: Dispositional mindfulness and the Big Five. *Pers. Individ Dif.,* 2021, **171**, 110469.
doi: 10.1016/j.paid.2020.110469
39. Klockner, K. & Thomas, M.J. *Keeping my mind on the job: The role of mindfulness in workplace safety,* [Conference session]. First international conference on mindfulness, rome. 2013.https://www.researchgate.net/profile/Dr-Karen-Klockner2/publication/318699267_Keeping_My_Mind_on_the_Job_The_Role_of_Mindfulness_in_Workplace_Safety/links/5977f29faca27203ecbde6bc/Keeping-My-Mind-on-the-Job-The-Role-of-Mindfulness-in-Workplace-Safety.pdf (Accessed on 5 October 2024)
40. Gorbovskaya, I.; Park, N. & Kim, C. The relationships between mindfulness, distraction control, and working memory. *Inkblot: Undergrad J. Psychol,* 2014, **3**, 20-27. https://www.researchgate.net/profile/Ilona-Gorbovskaya/publication/274001966_The_Relationships_Between_Mindfulness_Distraction_Control_and_Working_Memory/links/5b059ac2aca2725783d8949c/The-Relationships-Between-Mindfulness-Distraction-Control-and-Working-Memory.pdf (Accessed on 5 October 2024)
41. Asadi, S.; Abolghasemi, A. & Basharpoor, S. The effectiveness of mindfulness-based cognitive therapy on cognitive failure and emotional processing in anxious nurses. *Iran J. Nurs.,* 2016, **29**(102), 55-65.
doi: 10.29252/ijn.29.102.55
42. Mecacci, L.; Righi, S. & Rocchetti, G. Cognitive failures and circadian typology. *Pers. Individ Dif.,* 2004, **37**(1), 107-113.
doi: 10.1016/j.paid.2003.08.004
43. Sternberg, R.J. Images of mindfulness. *J. Soc. Iss.,* 2000, **56**(1), 11-26.
doi: 10.1111/0022-4537.00149
44. Aschwanden, D.; Sutin, A.R.; Luchetti, M.; Allemand, M.; Stephan, Y. & Terracciano, A. A systematic review and meta-analysis of the association between personality and cognitive failures/complaints. *Soc. Pers. Psychol Comp.,* 2020, **14**(11), e12565.
doi: 10.1111/spc3.12565
45. Stephan, Y.; Boiché, J.; Canada, B. & Terracciano, A. Association of personality with physical, social, and mental activities across the lifespan: Findings from US and French samples. *Bri. J. Psychol*, 2014, **105**(4), 564-580.
doi: 10.1111/bjop.12056
46. Curtis, R.G.; Windsor, T.D. & Soubelet, A. The relationship between Big-5 personality traits and cognitive ability in older adults–a review. *Aging Neuropsychol Cogn.*, 2015, **22**(1), 42-71.
doi: 10.1080/13825585.2014.888392
47. Soto, C.J. Is happiness good for your personality? Concurrent and prospective relations of the big five with subjective well-being. *J. Pers.,* 2015, **83**(1), 45-55.
doi: 10.1111/jopy.12081
48. Brown, K.W. & Ryan, R.M. The benefits of being present: Mindfulness and its role in psychological well-being. *J. Pers. Sol. Psychol,* 2003, **84**(4), 822-848.
doi: 10.1037/0022-3514.84.4.822
49. Bishop, S.R.; Lau, M.; Shapiro, S.; Carlson, L.E.; Anderson, N.D.; Carmody, J.; Segal, Z. V.; Abbey, S.; Speca, M.; Velting, D. & Devins, G. Mindfulness: A proposed operational definition. *Clin. Psychol Sci. Prac.,* 2004, **11**(3), 230–241 .https://psycnet.apa.org/record/2017-46123-017 (Accessed on 05 October 2024)
50. Holas, P. & Jankowski, T. A cognitive perspective on mindfulness. *Intern. J. Psychol,* 2013, **48**(3), 232–243.
doi: 10.1080/00207594.2012.658056
51. Eddy, P.; Wertheim, E. H.; Hale, M.W. & Wright, B.J. Trait mindfulness helps explain the relationships between job stress, physiological reactivity, and self-perceived health. *J. Occup. Env. Med.,* 2018, **61**(1), e12–e18 .https://pubmed.ncbi.nlm.nih.gov/30475310/ (Accessed on 6 October 2024)
52. Sindermann, C.; Markett, S.; Jung, S. & Montag, C. Genetic variation of COMT impacts mindfulness and self-reported everyday cognitive failures but not self-rated attentional control. *Mindful,* 2018, **9**, 1479-1485 .
doi: 10.1007/s12671-018-0893-4
53. Munoz, E.; Sliwinski, M.J.; Smyth, J.M.; Almeida, D.M. & King, H.A. Intrusive thoughts mediate the association between neuroticism and cognitive function. *Pers. Individ. Dif.,* 2013, **55***(8)*, 898-903.
doi: 10.1016/j.paid.2013.07.019
54. Molina-Rodriguez, S.; Ros-Leon, A. & Pellicer-Porcar, O. Characterizing the executive functioning associated with dispositional mindfulness. *Curr. Psychol*., 2023 Feb, **42** (6), 5123-30.
doi: 10.1007/s12144-021-01782-9
55. Duggan, K.A.; Friedman, H.S.; McDevitt, E.A. & Mednick, S.C. Personality and healthy sleep: The importance of conscientiousness and neuroticism. *PloS One,* 2014, **9**(3), e90628.
doi: 10.1371/journal.pone.0090628
56. Mascherek, A.; Zimprich, D.; Rupprecht, R. & Lang, F.R. What do cognitive complaints in a sample of memory clinic outpatients reflect? *GeroPsych: J. Gerontopsychol Geriatr Psychiatry,* 2011, **24**(4), 105-114.
doi:10.1024/1662-9647/a000046
57. Colvin, L.E.; Malgaroli, M.; Chapman, S.; MacKay-Brandt, A. & Cosentino, S. Mood and personality

characteristics are associated with metamemory knowledge accuracy in a community-based cohort of older adults. *J. Intern. Neuropsychol Soc.,* 2018, **24**(5), 498-510.
doi: 10.1017/S1355617717001345

58. Lange, S. & Süß, H.M. Measuring slips and lapses when they occur- Ambulatory assessment in application to cognitive failures. *Cons. Cogn.,* 2014, **24**, 1-11. doi: 10.1016/j.concog.2013.12.008
59. Giluk, T.L. Mindfulness, big five personality, and affect: A meta-analysis. *Pers. Individ. Dif.,* 2009, **47**(8), 805-811.
doi: 10.1016/j.paid.2009.06.026
60. Barnhofer, T.; Duggan, D.S. & Griffith, J.W. Dispositional mindfulness moderates the relation between neuroticism and depressive symptoms. *Pers. Individ. Dif.,* 2011, **51**(8), 958962.
doi:10.1016/j.paid.2011.07.032
61. Lomas, T.; Medina, J.C.; Ivtzan, I.; Rupprecht, S. & Eiroa-Orosa, F.J. The impact of mindfulness on the wellbeing and performance of educators: A systematic review of the empirical literature. *Teach Teachr Edu.,* 2017, **61**, 132-141.
doi: 10.1016/j.tate.2016.10.008

CONTRIBUTORS

Ms. Nivedita D. has completed her MSc. in Applied Psychology from Bharathiar University, Coimbatore, Tamil Nadu. She has worked as an internship trainee at DIPR, Delhi.
In the current study, she has contributed towards literature review, data collection and manuscript generation.

Dr. D. Ravi received his PhD in Psychometrics from Bharthiar University Coimbatore. He is currently working as a Scientist 'F' at Defence Institute of Psychological Research Laboratory (DIPR), DRDO, Delhi. Currently he is working in the field of Human factor and Aviation psychology.
In the current study, he has contributed in the planning, data analysis, and the methodology.

Dr. Shatarupa Chakraborty has received her MA in Psychology from University of Delhi and her PhD in Applied Psychology from Manav Rachna International Institute of Research and Studies, Faridabad, Haryana. She is currently working as Sports Analyst in Sports Authority of India.
In this study, her contribution was towards data analysis and manuscript preparation.

Ms. Sneha Bharaty has received her MSc. in Clinical & Counselling Psychology from West Bengal State University, Barasat. She has worked as a Junior Research Fellow (JRF) at Defence Institute of Psychological Research (DIPR), Delhi. She is currently working as an Assistant Professor in Kolkata, WB. In the current study she has contributed towards conducting review of literature, data collection and analysis and manuscript generation.

Ms. Devika Mohan has received her MSc. in Psychology from University of Mysore, Manasagangotri. She is currently working as a Senior Technical Assistant –'B' at Defence Institute of Psychological Research (DIPR), Delhi.
In the current study she has contributed towards data collection and review.

Ms. Selvapriya M has received her MSc. in Applied Psychology from Pondicherry University, Pondicherry. She is currently working as a Senior Technical Assistant –'B' at Defence Institute of Psychological Research (DIPR), Delhi.
In the current study she has contributed towards data collection and analysis.