

Research Paper

Metacognitive Awareness, Anxiety and Mindfulness in Special Educators and General Teachers

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ABSTRACT

The study aimed to compare and assess the relationship of mindfulness with metacognitive awareness and anxiety in special educators in comparison with general teachers. Sixty participants were recruited in 2 groups as per the defined criteria; 30 were special educators (SE) and 30 were general teachers (GT). The tools used in the study were: General Health Questionnaire, Metacognitive Awareness Inventory, State-Trait Anxiety Inventory. And Mindfulness Attention Awareness Scale. Assessment took 40 -50 minutes for each participant. Mindfulness and metacognitive awareness domains were correlated. Trait anxiety and mindfulness were negatively correlated in both SE and GT groups. The teacher training courses designed for teachers may incorporate mindfulness training to enhance metacognition and reduce anxiety.

Keywords: *Metacognition, Mindfulness, Special Educators, Teacher, Anxiety*

Teachers are known to be performing not only teaching but many additional non-teaching tasks such as addressing conduct issues in students, counselling students as well as parents, identifying health issues and making referrals, handling various academic and non-academic concerns of students, etc. (Cancio et al., 2018; Nichols & Sosonowsky, 2002). In addition, teachers face their workload and stressors as employees including salary, job insecurities, administrative difficulties, and personal life stressors (Nichols & Sosonowsky, 2002). These stressors multi-fold among special educators and there is sufficient evidence that highlights greater stress and burn-out among special educators than among general or mainstream teachers (Ghania, Ahmad, & Ibrahim, 2014; Adeniyi, Fakolade, & Tella, 2010; Ciraldo, 2020). Further, among the SE the stress is more severe in those dealing with intellectual disabilities compared to those dealing with visual or hearing disabilities (Ciraldo, 2020; Kaur, 2015).

The embedded stress results in burnout in some which may lead to physical and mental health issue while others may quit their job contributing to high attrition in teachers as well as special educators (Zhang, Bai, & Li, 2020; Gold, 1985). On the other hand, there might be those who gradually strengthen their resilience and develop immunity using adaptive or

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maladaptive coping mechanisms (Gu & Day, 2007). The prolonged exposure to stress results in poor stress response affecting the emotion regulation mechanism thru the hypothetical-pituitary axis (HPA) (Jaiswal, Muggleton, Juan, & Liang, 2019; Saviola et al., 2020). This influences cognitive processes and resulting attentional biases which can further decrease meta-awareness involving metacognitive knowledge and metacognitive skills. Metacognitive knowledge and skills are interrelated, knowledge is about the perception and synthesis of information about the external world and develops cognitive strategies while skills refer to regulation in the execution of these strategies (Bulut, 2018).

Therefore, it can be understood that metacognition is awareness of mental processes including encoding, storage, and retrieval crucial to learning, as we know learning is also determined by factors such as attention, interest, motivation, attitude, etc. Metacognition is about being aware of the sources and beliefs that affect these sources of cognitive processes. Metacognition is a trait that can be developed; the research highlights the significance of metacognition in learning, attention and other cognitive functions, and interpersonal effectiveness. The role of metacognition has been widely studied in the student as well as teacher or special educator population (Biggs, 1988; Wang, Binning, Toro, Qin, & Zepeda, 2021).

Metacognition has been linked to mindfulness, that is, mindfulness involves developing awareness and acceptance of constantly changing experiential phenomena such as cognitions, emotions, sensations, and external stimuli. Several researchers have theoretically related mindfulness with meta-cognition implying that mindfulness practice alters metacognition. Meta-awareness is the fundamental mechanism sub-serving all the other mechanisms explaining the effectiveness of mindfulness. For example, meta-awareness plays a central role in both attention regulation and emotion regulation (Jankowski & Holas, 2014; Sanger & Dorjee, 2016). Metacognition is crucial in learning and teaching and mindfulness practice can improvise metacognition leading to better academic output. The use of mindfulness in special educators had increased empathy, motivation, self-efficacy, and compassion towards the students and themselves resulting in improved focus on the needs of the students and the classroom environment (Ridderinkhof, Bruin, Brummelman, & Bögels, 2017; Ngô, 2013).

RESEARCH METHODOLOGY

Aim

To assess the relationship of mindfulness with metacognitive awareness and anxiety in special educators in comparison with general teachers.

Objectives

- To assess the relationship of mindfulness with metacognitive awareness and anxiety in special educators.
- To assess the relationship of mindfulness with metacognitive awareness and anxiety in general teachers.
- To compare special educators and general teachers in mindfulness, metacognitive awareness, and anxiety.

Hypothesis

- There will no difference between special educators and general teachers on mindfulness.

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- There will no difference between special educators and general teachers on metacognitive awareness.
- There will no difference between special educators and general teachers on anxiety.

Problem statement

There are only a handful of studies that investigated or tried to throw light upon metacognitive awareness, anxiety, and mindfulness in Special educators and General teachers. More interestingly not a single research, out of these studies, had been conducted in India. The gap in literature from India motivated authors to study mindfulness, metacognition, and anxiety among general teachers and special educators.

Research Design and sample

The research design was cross-sectional and comparative. The data was collected from 60 participants divided into two groups using purposive sampling (Singh, 1998). The sample comprised 30 special educators (SE) and 30 general teachers (GT). The SE sample was from a government institute for those with intellectual disabilities attached to a tertiary care Hospital while the GT sample was from the primary education wings of a mainstream government school located in the area surrounding the Hospital. The participants were both males and females of age between 25 to 45 years having work experience of more than 6 months in the same workplace. While those who had any psychiatric morbidity, daily use of alcohol and substance, suicidality, or any neurological condition were excluded.

Tools

- **Socio-demographic and information sheet** The Performa was developed by the researchers to record the socio-demographic and other details as defined by the inclusion and exclusion criteria.
- **General Health Questionnaire (GHQ 28)** GHQ-28 is a screening tool to identify those likely to have or to be at risk of developing psychiatric disorders (Goldberg & Hillier, 1979). It has 28 items that measure emotional distress divided into four subscales namely; somatic symptoms (items 1–7); anxiety/insomnia (items 8–14); social dysfunction (items 15–21), and severe depression (items 22–28). The administration takes about 10 minutes.
- **Metacognitive Awareness Inventory (MAI)** It aims to assess general self-regulated learning skills (Schraw & Dennison, 1994). It has 2 domains namely; cognitive knowledge: which consists of declarative, procedural, and conditional; and metacognitive processes: which consists of planning, information management strategies, monitoring, debugging strategies, and evaluation. It takes approximately 15-20 minutes to administer MAI.
- **State-Trait Anxiety Inventory (STAI)** It measures current anxiety symptoms and their severity and generalized propensity to be anxious. It consists of 40 items and takes approximately 15- 20 minutes to administer (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 2013).
- **Mindfulness Attention Awareness Scale (MAAS)** It was developed by Brown and Ryan in 2003 and assesses a core characteristic of mindfulness- a receptive state of attention, simply observing what is taking place in the present. It has 15 items. It is rated on a Likert scale of 1 to 6 and scored by finding the mean of the scores.

Procedure

The study was approved by Institution Ethics Committee. Following this, the authorities of schools, both special and mainstream, were approached, and approval of IEC was submitted along with a letter to seek permission from School Authorities for data collection. The primary researcher visited the Special School during work hours and approached the special educators (SE) for individual consent. Those consenting were administered GHQ28, whose score was below the cut-off were further administered the assessment measures (MAI, STAI, MAAS). It took almost 3 weeks to complete the SE sample. Afterward, the government schools in the nearest vicinity were approached. Once permitted, the researcher was allowed to approach the teachers of general schools only during the fixed hours as decided by the School authorities. The researcher sought individual consent from the general teachers and administered GHQ28. Those whose GHQ28 was below the cut-off were given the assessment measures (MAI, STAI, MAAS) to fill their responses. The researcher went to collect the responses over a period of 24-72 hours and stayed in touch on phone to post a reminder. The data was collected from 3 government schools in about 10 weeks. Each assessment was of 40 -50 minutes in duration approximately.

Statistical analysis

The data were analysed using the statistical package of social sciences (24.00 version). The descriptive statistics including mean, standard deviation, and frequencies were computed for the sample characteristics. The differences between the two groups (SE and GT) were analysed using a t-test. Pearson correlation was used to find out the direction and strength of the relationship between mindfulness with metacognitive awareness and anxiety (Moore, Notz, & Slinger, 2013).

RESULTS

The participants in both the groups (SE and GT) showed no significant differences in age and years of experience, except there was a significant difference observed in years of education.

Table 1. Participant characteristics

Variable	SE	GT	χ^2	p	
Age (M±SD)	37.60 ± 6.00	35.60 ± 5.65	23.04	.342	
Sex (f, %)	Female	23 (77)	27 (90)	-	-
	Male	7 (23)	3 (10)		
Education years	18.60 ± .81	18.13 ± 1.36	8.82	.012	
Current job (months)	73.17 ± 57.92	100.60 ± 75.60	53.33	.277	
Total work experience (months)	148.07 ± 69.64	132.73 ± 87.94	43.30	.139	

*** – $p < .001$; ** – $p < .01$; * – $p < .05$

M= Mean; SD= standard deviation, SE = special educators; GST =general school teachers; χ^2 = Chi square;

The mean score differences between the two groups were significant (Table2) on metacognitive but no significant differences were observed mindfulness, and anxiety.

Table 2. Comparing groups SE and GT on metacognitive awareness, anxiety and mindfulness using t-test

Variables	SE	GT	t	p
MAI	48.40± 4.583	46.23 ± 4.88	1.77	.520
DK	7.57 ± .72	6.80 ± 1.60	2.38	.000***
PK	3.77 ± .72	3.53 ± .77	1.20	.078
CK	4.77 ± .89	4.50 ± .90	1.15	.195
PL	6.67 ± .84	6.20 ± 1.06	1.88	.054*
IMS	9.07 ± .98	8.43 ± 1.33	2.09	.087
CM	6.40 ± 1.16	6.20 ± 1.03	.70	.879
DS	4.63 ± .71	4.77 ± .57	.79	.117
EVA	5.60 ± .72	5.47 ± 1.07	.56	.202
STAI				
HX-I	45.80 ± 7.31	43.63 ± 7.04	1.17	.689
HX-II	46.07 ± 5.16	47.13 ± 5.93	.74	.383
MAAS	68.93 ± 12.16	69.97 ± 11.54	.34	.853

*** - $p < .001$; ** - $p < .01$; * - $p < .05$

N = Number, SD = Standard Deviation, t = T test, p = Significant, SE = Special Educator, GST = General Teachers, MAI = Metacognitive Awareness Inventory, DK = Declarative Knowledge, PK = Procedural Knowledge, CK = Conditional Knowledge, PL = Planning, IMS = Information Management Strategies, CM = Comprehension Monitoring, DS = Debugging Strategies, EVA = Evaluation, STAI (HX-1) = State Trait Anxiety Inventory -State Anxiety, STAI (HX-2) = State Trait Anxiety Inventory-Trait Anxiety, MAAS = Mindful Attention Awareness Scale.

Tables 3 and 4 demonstrate the correlation analysis of SE and GT groups.

Table 3. Correlation analysis of scores of SE group (n=30) on assessment measures

		MAI								STAI		MAA	
		MA	D	P	C	P	IM	C	D	EV	HX	HXI	S
		I	K	K	K	L	S	M	S	A	I	I	
MAI	MAI	1	.79	.6	.60	.6	.44	.92	.2	.86	-.06	-.06	-.41*
	DK	-	1	.4	.31	.7	.09	.78	.0	.64	-.23	-.11	-.43*
	PK	-	-	1	.70	.1	.12	.60	.0	.60	-.01	-.29	-.17
	CK	-	-	-	1	-	.21	.62	-	.59	-.25	-.15	-.10
	PL	-	-	-	-	1	.07	.70	.0	.45	-.07	.03	-.39*
	IMS	-	-	-	-	-	1	.18	.1	.33	.29	.15	-.24
	CM	-	-	-	-	-	-	1	.0	.81	-.20	-.05	-.39*
	DS	-	-	-	-	-	-	-	1	.04	-.05	.01	.01
	EV	-	-	-	-	-	-	-	-	1	.05	-.02	-.33
	A												
STAI	HXI	-	-	-	-	-	-	-	-	-	1	-.09	.28
	HXI	-	-	-	-	-	-	-	-	-	-	1	-.60**
	I												
MAAS		-	-	-	-	-	-	-	-	-	-	-	1

*** - $p < .001$; ** - $p < .01$; * - $p < .05$

N = Number, SD = Standard Deviation, t = T test, p = Significant, SE = Special Educator, G T = General School Teachers, MAI = Metacognitive Awareness Inventory, DK = Declarative Knowledge, PK = Procedural Knowledge, CK = Conditional Knowledge, PL = Planning, IMS = Information Management Strategies, CM = Comprehension Monitoring, DS = Debugging Strategies, EVA = Evaluation, STAI (HX1) =

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State Trait Anxiety Inventory -State Anxiety, STAI (HXII) = State Trait Anxiety Inventory-Trait Anxiety, MAAS = Mindful Attention Awareness Scale.

Table 4. Correlation analysis of scores of GT group (n=30) on assessment measures

		MAI									STAI		MAAS
		MAI	DK	PK	CK	PL	IMS	CM	DS	EVA	HXI	HXII	
MAI	MAI	1	.55	.65	.68	.84	.54	.67	.09	.79	.11	-.08	.53**
	DK	-	1	.06	.24	.36	.28	.42	-.05	.11	.16	-.19	.48**
	PK	-	-	1	.49	.57	.37	.25	-.09	.64	-.04	.05	.15
	CK	-	-	-	1	.83	.10	.33	.03	.60	-.02	-.19	.45*
	PL	-	-	-	-	1	.18	.56	.13	.70	-.02	-.22	.53**
	IMS	-	-	-	-	-	1	.06	.00	.45	.14	.35	-.00
	CM	-	-	-	-	-	-	1	.14	.47	.18	-.13	.56**
	DS	-	-	-	-	-	-	-	1	-.15	.23	-.23	.48**
	EVA	-	-	-	-	-	-	-	-	1	-.06	.09	.21
STAI	HXI	-	-	-	-	-	-	-	-	1	.00	.38*	
	HXII	-	-	-	-	-	-	-	-	-	1	-.51**	
MAAS		-	-	-	-	-	-	-	-	-	-	1	

*** $-p < .001$; ** $-p < .01$; * $-p < .05$

N = Number, SD = Standard Deviation, t = T test, p = Significant, SE = Special Educator, GT = General Teachers, MAI = Metacognitive Awareness Inventory, DK = Declarative Knowledge, PK = Procedural Knowledge, CK = Conditional Knowledge, PL = Planning, IMS = Information Management Strategies, CM = Comprehension Monitoring, DS = Debugging Strategies, EVA = Evaluation, STAI (HX-I) = State Trait Anxiety Inventory -State Anxiety, STAI (HX-II) = State Trait Anxiety Inventory-Trait Anxiety, MAAS = Mindful Attention Awareness Scale.

The regression analysis determines the coefficient of determination (R^2), predicting the amount of change in the dependent variable (DV) contributed by the independent variable (IV). For the SE group, it was observed that the metacognitive awareness, declarative knowledge, planning, comprehension monitoring, and trait anxiety significantly ($p < .001$) predicted >90% variation in mindfulness. The table depicted that the metacognitive awareness accounted for 95% of the total variation in mindfulness ($R^2=.95$). Similarly, declarative knowledge, planning, and comprehension monitoring predicted 95%, 94%, and 91% variation in mindfulness respectively. It was noticed that state anxiety contributed to a 93% variation in mindfulness.

Table 5. Relationship between IV and DV using regression analysis

SE group (n=30)										
IV	DV	r	Regression				Adjusted R ²	t	p	Beta
			B	SE	F					
MAAS	MAI	MAI	-.41*	.68	.03	546.88	.95	23.39	.000	.97
		DK	-.43*	.11	.00	535.40	.95	23.14	.000	.97
		PL	-.39*	.09	.00	451.20	.94	21.24	.000	.97
		CM	-.39*	.09	.00	325.36	.91	18.04	.000	.96
	STAI	HXII	-.60**	.64	.03	432.37	.93	20.80	.000	.97
GT group (n=30)										
IV	DV	r	Regression				Adjusted R ²	t	p	Beta
			B	SE	F					
MAAS	MAI	MAI	.53**	.22	.07	10.80	.25	3.29	.003	.53
		DK	.48**	.07	.02	8.36	.20	2.89	.007	.48
		CK	.45*	.01	.01	.70	.01	.84	.410	.16
		PL	.53**	.05	.01	11.19	.26	3.34	.002	.53

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	CM	.56**	.05	.01	13.19	.30	3.63	.001	.57
	DS	.48**	.02	.01	8.74	.21	2.96	.006	.49
STAI	HXI	.38*	.23	.11	4.79	.12	2.19	.037	.38
	HXII	-.51**	.26	.08	10.16	.24	3.19	.004	.52

*** $-p < .001$; ** $-p < .01$; * $-p < .05$

IV=Independent variable, DV= Dependent variable, SE= Special Educators, r=Correlation, MAI = Metacognitive Awareness Inventory, DK = Declarative Knowledge, PK = Procedural Knowledge, CK = Conditional Knowledge, PL = Planning, IMS = Information Management Strategies, CM = Comprehension Monitoring, DS = Debugging Strategies, EVA = Evaluation, STAI (HX-I) = State Trait Anxiety Inventory - State Anxiety, STAI (HX-II) = State Trait Anxiety Inventory-Trait Anxiety, MAAS = Mindful Attention Awareness Scale

For the GT group, it is observed that the metacognitive awareness, declarative knowledge, planning, comprehension monitoring, debugging strategies, and trait anxiety significantly ($p < .05$) predicted >20% variation in mindfulness while conditional knowledge and state anxiety appeared to have no significant ($p > .05$) contribution to mindfulness. The table depicted that the metacognitive awareness accounted for 25% of the total variation in mindfulness ($R^2=.25$). Similarly, declarative knowledge, planning, comprehension monitoring, and trait anxiety contribute 20%, 26%, 30%, and 24% variation in mindfulness respectively.

DISCUSSION

The findings revealed that the SE group had a significantly higher score on declarative knowledge and planning than the GT group. This difference could be explained by the difference in the theoretical frame of knowledge divided into declarative and procedural, the former addressing factual and conceptual learning while the latter denotes practical skills gained with experience (Saks, Ilves, & Nobel, 2021). Special educators usually deal with varied disabilities and the challenges of any one individual with a disability may not be generalized. Additionally, the contextual characteristics related to a usual student versus a student with a disability draw upon these differences in the knowledge of SE and GT. Planning in classroom teaching refers to the methods to be used in teaching determining what to teach, when and how (Nesari & Heidari, 2014). The characteristics of the students account for variation in learning and certain principles might be generalized in the mainstream education but this kind of generalization may not be feasible in the delivery of special education (Saks et al., 2021; Hattie, 2003). This impinges the special educators to utilize a variety of theories to be implemented in a tailor-made approach while dealing with a student with the disability leading to the strengthening of declarative and planning knowledge.

Mindfulness and metacognitive awareness domains were negatively correlated in the SE group while in the GT group mindfulness was positively correlated with metacognitive awareness domains. The role of anxiety as a mediator between metacognition and mindfulness relationship is well-established (Hadipour & Rezaei-Jamalouei, 2021) and mindfulness training enhances regulation of metacognition i.e. gaining knowledge and skills to disseminate the knowledge. The SE and GT samples of the current study had trait anxiety significantly contributing to variation in mindfulness as seen in regression analysis. The anxiety scores may have contributed to the negative relationship between mindfulness and metacognition in the current sample.

Trait anxiety and mindfulness were negatively correlated with metacognitive awareness domains in both SE and GT groups. Student performance is significantly linked to effective

teacher-student relationships rooted in the teacher's personality and the stress experienced by the teacher often contaminates the teaching environment (Coates & Thoresen, 1976; Haydon, Leko & Stevens, 2018). The stress may source from the various factors such as job insecurities as the SE sample had lesser average months of being in their current job. Also, 95% of the total sample was females who are known to play dual role with responsibilities of family and work contributing to a greater stress. The augmentation of protective factors can reduce the impact of stress leading to creating enriching teaching and learning experiences for both students as well teachers and special educators (Haydon et al., 2018).

CONCLUSION

The subjective state of mind interferes with metacognition abilities, which is instrumental in teaching methods and strategies used by both general teachers and special educators. The teacher training courses designed for teachers must emphasize mindfulness training to enhance metacognition and reduce anxiety. Similar programs for personal and professional development must be effectively carried out for special educators. The present study had a small sample restricted to female participation. Future studies can explore other sources of stress and resilience in special educators and programs can be designed accordingly to enhance the mental health of special educators as well students with disability.

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Conflict of Interest

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