

Yoga Based Practices & Creative Problem Solving: The Role of Embodied Self-regulation & Self-transcendence

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Given the ever-rising complexity and uncertainty, creative problem solving (CPS) is critical for organizations. The current study examines the relationship of embodied self-regulation (ESR) and self-transcendence (ST) with CPS. It also investigates how the Yoga-based Practices (YBP), a holistic intervention, impact ESR and ST. To test the hypotheses, two studies were conducted with a sample of respondents having prior professional experience enrolled in a management program. First study supported the theoretical model of ESR and ST as antecedents of CPS, and second study indicated the positive impact of YBP on ESR and ST, respectively. This research extends the literature on CPS training and discusses the theoretical and managerial implications.

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Introduction

In the organizations managers at all levels have to make decisions and continuously engage in one key activity, i.e., problem-solving (Szarucki, 2013). Given the competitive pressures and uncertainties in the current times, the problems have become more complex and require creative thinking (Santanen et al., 2004). Creative Problem Solving (CPS) has become a cornerstone for the success of any business organization (Anderson et al., 2014). Further, Florida and Goodnight (2005) state that compared to other resources, the creative capital of an organization is its most important asset.

CPS is a skill that can be learned (Amabile & Pillemer, 2012) and research supports the efficacy of creative training for CPS (Scott et al., 2004; Wang & Horng, 2002). Given that business leaders are expected to render novel solutions to business problems, it is crucial to explore the training through which CPS can be nurtured.

Solving problems creatively involves extensive and arduous cognitive processing (Mumford et al., 2012). According to the dual pathway to creativity model (DPCM) (De Dreu et al., 2008), creative insights result from two creative processes: cognitive flexibility and cognitive persistence. Research demonstrates that training programs involving mental exercises (role plays and dramas) and, lately, physical activity is found to improve creative ability (Karwowski & Soszynski, 2008; Hao et al., 2017; Oppezzo & Schwartz, 2014). Additionally, research discusses the link between creativity and spirituality (Chin et al., 2012).

Solving problems creatively involves extensive and arduous cognitive processing.

Yoga is an ancient system integrating physical, mental, emotional, and spiritual practices to attain moral life, well-being, calmness, and spiritual elevation (Iyengar, 2008; Corner, 2009). Studies have examined the impact of meditation on creativity (Horan, 2009; Colzato et al., 2012) via its cognitive effects, i.e., positive affect (Ding et al., 2014) and cognitive flexibility (Müller et al., 2016). However, research investigating the effect of integrative Yoga practice and the underlying pathways remains scarce.

In response, guided by DPCM (De Dreu et al., 2008), firstly, based on a survey, our study examines the proposed theoretical model denoting the association of Embodied Self-regulation (ESR) and Self-Transcendence (ST) with CPS.

Subsequently, the study investigates the impact of a holistic intervention, Yoga-based Practices (YBP) comprising postures, breath-regulation, and meditation, on ESR and ST. In doing so, we employ an experimental design with comparable intervention and (active) control groups.

Understanding the role of YBP to strengthen CPS capacity has important implications for research and practice. First, limited inquiry has been made regarding the significance of the body or somatic awareness pertaining to creative insights (Haas, 1996). Second, although the association between spirituality and creativity has been proposed (Shaw, 2005; Corry et al., 2013), empirical examinations are scarce. Studying the association of ESR and ST with CPS would help obtain vital insights concerning the above relationships. Further, by incorporating YBP and CPS, the study contributes to the research on CPS training and the role of spiritual practices in management (Tackney et al., 2017).

Creative Problem Solving

Creativity is defined as the ability to generate novel work or ideas which are useful (Sternberg & Lubart, 1996) and represents the ideation process. Although related, CPS differs from creativity. CPS encompasses the creative processes underlying the generation phase (involving identification and construction, search and attainment of information), and ideation, as well as those associated with the implementation phase (includes idea evaluation, idea selection, and implementation planning) (Carmeli et al., 2013). In

this study, we do not consider creativity as an outcome; however, we focus on the CPS capacity, i.e., the ways in which individuals interpret and use knowledge to solve problems creatively. Existing research has discussed some of the factors that influence CPS, namely, attitude: divergence and convergence (Basadur et al., 2000), self-efficacy (Jaussi et al., 2007), motivation (De Dreu et al., 2012), personality (Hoff et al., 2012), problem-solving strategies (Scott et al., 2005), and positive affect (Isen et al., 1987).

Yoga-based Practices

Etymologically, Yoga is derived from the root “*yu*” that means to yoke and connotes with union and sum (Feuerstein, 2011). At the philosophical level, Yoga represents the joining of the individual consciousness with the universal consciousness (Taneja, 2014). At the practical level, it encompasses the practices to develop harmony in the body, mind, and spirit and transcending the ego-personality (Feuerstein, 2011). Sage Patanjali gave an “eight-limbed” structure to the yogic path, i.e., Ashtanga Yoga (Feuerstein, 2011). It encompasses: moral observances (*Yama*), self-discipline (*Niyama*), sustained physical postures (*Asana*), breath-regulation (*Pranayama*), sensory withdrawal (*Pratyahara*), concentration (*Dharana*), meditation (*Dhyana*), and self-transcendence (*Samadhi*) (Stone, 2009). Dagar & Pandey, 2020 for the philosophical foundations of Yoga). Research on the impact of Yogic practices has focused on myriad aspects, e.g., the benefits related to executive functioning (working

memory, inhibition) (Gothe et al., 2013), emotional state (Telles et al., 2013), health (Büssing et al., 2012b), and well-being (Woodyard, 2011).

Embodied Self-regulation (ESR)

Creative insights to problems, as per the DPCM (De Dreu et al., 2008), are outcomes of the two pathways of creative processes: cognitive flexibility (captures broad associations and divergent thinking) and cognitive persistence (captures sustained and focused exploration). The processes underlying ESR have direct implications for the two pathways. ESR reflects the ability to regulate psychological distress by adaptively attending to body sensations (Mehling et al., 2012). This regulation of the felt experience engenders a calm state and positive emotions. Positive emotions broaden the thought-action repertoire (Fredrickson, 2001), and consequently cognitive flexibility (Isen et al., 1987) critical for creative insights. ESR entails attention to body, i.e., present-oriented focus, thus, influencing the engagement and cognitive persistence (Mägi et al., 2018). Intuition is crucial for solving complex and ill-defined problems. Reflecting mind-body integration, ESR facilitates intuitive functioning by connecting with somatic markers, referred to as “gut feeling” (Sadler-Smith & Shefy, 2007). Hence, we hypothesize that

Intuition is crucial for solving complex and ill-defined problems. Reflecting mind-body integration.

H1: Embodied Self-regulation is positively associated with creative problem solving

Self-Transcendence (ST)

ST involves surrendering the limited sense of self via enhanced awareness that inhibits attachment to self-bound constructs, thereby widening perception of numerous potential possibilities and connections (Maslow, 1969; Horan, 2009). This ego-transcendence decreases self-centeredness, which is also referred to as decentering (Wink & Helson, 1997). Decentering entails self-reflection and uncoupling from one's limiting thoughts and emotions (Fresco et al., 2007). Considering the DPCM, the widening of perception and detached view of self would be effective in engendering divergent thoughts and maintaining persistence in solving problems creatively.

Characterized by fading away of the self, ST as a state of flow and focused absorption has been deemed vital for both flexible thinking and persistence aspects of creative endeavors (Csikszentmihalyi, 1997). Additionally, research has linked self-transcendent purpose at work with greater persistence on tasks (Grant & Hoffman, 2011). Thereby, we hypothesize that

H2: Self-transcendence has a positive relationship with creative problem solving

YBP & Embodied Self-regulation (ESR)

ESR reflects the ability to regulate psychological distress by adaptive atten-

yoga practitioners demonstrate increased pain tolerance by exercising the ability to attend to the sensation of pain, observe it without reacting, and accept the experience.

tion to the body and its felt sensations (Mehling et al., 2012). As a mind-body practice, Yoga entails a non-judgmental awareness of the felt experience of the body (Daubenmier, 2005). YBP entrains one to inculcate awareness of bodily sensations and regulate attention to the breath, posture, and present moment (Herrick & Ainsworth, 2000). Enhancing body awareness for self-regulation has been stated as a mechanism of action for mind-body approaches, such as Yoga (Mehling et al., 2011). Also, YBP prepares one to accept the discomfort without reacting by consciously breathing through it to avoid impulsive actions (Tellhed et al., 2019). Thus, YBP are instrumental in cultivating mindful attention to the body and its felt sensations to render balance and calmness, i.e., ESR. Research indicates that yoga practitioners demonstrate increased pain tolerance by exercising the ability to attend to the sensation of pain, observe it without reacting, and accept the experience (Villemure et al., 2014). Hence, we posit that

H3: Yoga-based Practices positively impact embodied self-regulation.

YBP & Self-Transcendence (ST)

ST refers to the awareness of being an inherent part of the universe at large

or the experience of cosmic unity (Johnstone et al., 2016). Yoga denotes union of the individual consciousness with the supreme consciousness (Taneja, 2014). This concurs with the science of unitary human beings (Rogers, 1980), which presents the basis for the theory of self-transcendence (Reed, 2013). The science of unitary human beings postulates an integrated view of humankind and the universe.

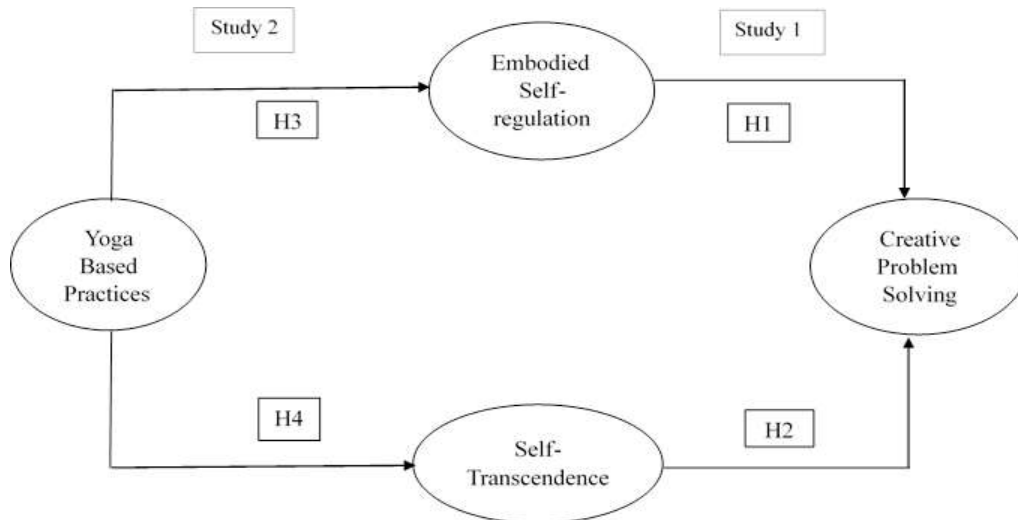
Yoga has historically been regarded as a path to attain ST (Feuerstein, 2011). However, limited research has been conducted on this pathway. For reference,

regular yoga practitioners compared to non-practitioners exhibited higher ST (Fiori et al., 2014). And, an ethnographic fieldwork examined the association between Yoga and ST in a prison setting (Griera, 2017). Further, Yoga strengthens spiritual connection and encourages personal reflection (Büssing et al., 2012a; Herrick & Ainsworth, 2000). Therefore, we hypothesize that

H4: Yoga-based Practices positively impact self-transcendence.

Figure-1 graphically represents the hypotheses.

Fig. 1 Theoretical Model



Methodology & Findings

We conducted two studies to test the hypotheses. Study 1, a survey, examined the relationship of ESR and ST with CPS (H1 and H2) respectively, while study 2, an experimental design, investigated the impact of YBP on ESR (H3) and ST (H4).

Study 1: Participants

Employing the purposive sampling method, we sampled from students with past professional experience enrolled in the Master of Business Administration (MBA) program. We used the online survey method for data collection, wherein

ESR, ST, and CPS were measured in a self-report format. 203 completed responses were received, representing a response rate of 88%. The average age of the respondents (N= 203) was 24.2 years, the average work experience was 26 months, and women comprised 31% of the sample.

Study 1: Measures

5-point Likert scale was used to measure items of the constructs: ESR and ST (1=strongly disagree, 5=strongly agree) and CPS (1=almost never, 5=very often).

ESR was measured with the self-report four-item subscale from the multidimensional assessment of interoceptive awareness (MAIA) developed by Mehling et al. (2012). A sample item is: “When I feel overwhelmed, I can find a calm place inside”. ST was measured by adapting nine items from Kirk et al. (1999). Sample item includes “I have had moments of great joy in which I suddenly had a clear, deep feeling of oneness with all that exists”. CPS was measured using the ten-item subscale on solving problems creatively, self-assessment of managerial behavior from the Personal Assessment of Management Skills (PAMS) questionnaire (Whetten & Cameron, 2005). Sample item includes: When faced with an ambiguous or difficult problem that does not have an easy solution: “I try out several definitions of the problem. I don’t limit myself to just one way to define it.” Based on the factor analysis process, two items were dropped due to validity issues.

Study 1: Findings

Firstly, following Anderson and Gerbing (1988), we conducted a confirmatory factor analysis to test the adequacy of the measurement model. SPSS version 21 and AMOS version 21 were used for the data analysis. We tested the adequacy of our hypothesized model encompassing 3 factors (ESR, ST & CPS). The results showed acceptable fit (CMIN/DF = 1.398, CFI = 0.934, RMSEA = 0.044, SRMR = 0.065) (Hu & Bentler, 1999).

Successively, we examined alternative models that showed a less desirable fit, thereby confirming the suitability of the hypothesized model. Composite reliabilities of ESR (0.75), ST (0.82), and CPS (0.74) along with Cronbach’s alpha were greater than 0.7, thus confirming convergent validity (Hair et al., 2009). As no inter-factor correlations exceeded the 0.85 cut-off value and the square root of average variance extracted for ESR (0.67), ST (0.58), and CPS (0.51) was larger than the correlation among constructs, discriminant validity was ensured (Kline, 2015; Fornell & Larcker, 1981). Further, Harman’s one-factor test extracted 22% variance showing minimal presence of common method bias (Fuller et al., 2016).

Subsequently, the hypothesized paths, i.e., ESR à CPS and ST à CPS, were estimated using structural equation modelling (SEM). The structural model yielded an acceptable fit (CMIN/DF = 1.398, CFI = 0.934, RMSEA =

0.044). The path estimates of ESR ($\beta^1 = 0.315$, $SE^2 = 0.153$, $p = .006$) and ST ($\beta = 0.221$, $SE = 0.111$, $p = .036$) showed significant positive relationship with CPS, hence supporting hypotheses H1 and H2.

Table 1 Descriptive Statistics, Correlations, and Reliability

Construct	Mean	SD	1	2	3
1. Embodied Self-regulation	3.71	0.65	(0.73)		
2. Self-transcendence	3.44	0.65	0.45*	(0.83)	
3. Creative Problem Solving	3.80	0.48	0.41*	0.36*	(0.73)

N = 203. Cronbach's Alpha on the diagonal in parentheses. * $p < 0.01$

Table 2 Measurement Model & Alternate Models

Models	χ^2	df	χ^2 / df	CFI	RMSEA	SRMR
Measurement Model (Three factor)	254.36	182	1.39	0.93	0.044	0.065
Alternate model 1 (combining ESR & ST)	398.44	184	2.17	0.81	0.076	0.075
Alternate model 3 (combining ESR, ST, & CPS)	522.05	185	2.82	0.69	0.095	0.093

ESR = Embodied Self-regulation. ST = Self-transcendence. CPS = Creative Problem Solving

Study 2: Participants & Design

The study used an experiment with randomized control and experimental groups. Students of the MBA program who enrolled in an eight-week credit course on self-management were randomly assigned to two sections with identical dates of instruction, course content, mode of delivery, and instructor. The completed data from 103 participants (46% women, average age 24 years) was finally used. The students of one section served as the control group ($n = 48$) while the students of another section represented the experimental group ($n = 55$). YBP as an intervention was offered to the students in the experimental group in addition to the regular content. The control condition represented an active control group, wherein the partici-

pants were given 20-minutes time for discussion and self-reflection exercises on the topics of the sessions (time management, energy-focus management, understanding the self). All other elements of the two conditions were held constant. The control group was provided Common Yoga Protocol (CYP) training in separate sessions.

Study 2: Measures

The measures of ESR and ST were same as employed in study 1 and took place at two time-points: before (pre) and after the intervention (post). Table 3 presents the psychological measures collected for both the groups.

Study 2 Intervention: Yoga-based Practices (YBP) Protocol

In the introductory session of two hours, training was offered in the externally expressed practices of Yoga like

¹ Standardized path loading

² Standard Error

yama, niyama, asana, and pranayama. The practices taught to the students were as per the Common Yoga Protocol (CYP)³. Post the introductory session in the first week, a shorter version of the practices was drawn from the CYP to be conducted during the classes twice a week. The shorter YBP Interventional Protocol involved two (approx.) 25-minutes long in-person sessions over the course of 7-weeks with a total of 14 sessions (see appendix A). The CYP and short YBP were taught by a trained instructor in Yoga with an experience of more than 20 years. The same instructor conducted the sessions in the classroom twice a week.

Study 2: Findings

SPSS version-21 was used for data analysis. Mixed-design analyses of

variance (ANOVA) were run on the pre- and post-scores of ESR and ST to examine the group × time interaction, i.e., the evolution of experimental and control groups over two time-points. For all analyses, effect size estimates were reported as partial eta squared.

The results of independent samples t-test revealed no group differences for ESR ($t(101) = .082, p = .935$) and ST ($t(101) = .301, p = .764$) at the pre-test stage. There was a significant group × time interaction effect for ESR, $F(1, 101) = 4.406, p = .038, \eta^2 = 0.04$ and ST, $F(1, 101) = 4.915, p = .029, \eta^2 = 0.05$, indicating that the intervention succeeded in increasing ESR and ST in the YBP participants as compared to the (active) control group.

Table 3 Psychological Measures at Baseline : Post-Intervention

Measures	Experiment Group (n = 55)		Control Group (n = 48)	
	Baseline Mean (SD)	Post-Intervention (SD)	Baseline Mean (SD)	Post-Mean (SD)
Embodied Self-regulation	3.71 (0.62)	4.20 (0.54)	3.70 (0.68)	3.94 (0.69)
Self-transcendence	3.45 (0.60)	3.93 (0.62)	3.42 (0.60)	3.63 (0.67)

Additionally, we undertook within-group analysis to test the impact of intervention on ESR and ST via repeated-measures ANOVA. The results revealed significant positive changes in the experimental group from the baseline to post-intervention for ESR ($F(1, 54) = 35.795, p < .001, \eta^2 = 0.39$) and ST ($F(1, 54) = 30.971, p < .001, \eta^2 = 0.36$). Considering the positive nature of the

(active) control group, a significant increase was found in ESR ($F(1, 47) = 7.564, p = .008, \eta^2 = 0.14$) and ST ($F(1, 47) = 6.615, p = .013, \eta^2 = 0.12$) from pre to post study. However, considering the effect size, the positive significant change in the experimental group was substantially higher than the control group. Therefore, the hypotheses H3 and H4 were supported.

³ https://dipp.gov.in/sites/default/files/Internatioanl_Yoga_Day_2016.pdf

Discussion

Considering the uncertainty, the ability to find optimal solutions to business problems has become paramount for organizations to remain competitive. Consequently, developing CPS skills is crucial. This study assessed and found support for the impact of YBP on ESR and ST, and their role as antecedents to CPS.

This study contributes to the theory and research on CPS in management, training for enhancing CPS capacity, and the role of body-mind interventions therein. First, it extends the literature exploring factors that facilitate or inhibit CPS (Mumford & Hunter, 2005) by establishing ESR and ST as antecedents. Second, addressing the call for understanding the means to improve creativity (George, 2007), results from the experiment indicate that YBP are an effective tool to enhance CPS.

Further, our study contributed to the theoretical and applied aspects of the DPCM (De Dreu et al., 2008). We found support for the efficacy of YBP to nurture ESR and ST as precursors to cognitive flexibility and persistence, the essentials of creative insights as per the DPCM. By focusing on ESR and ST, the current study highlighted the role of body-mind interaction and spiritual aspect for promoting cognitive flexibility and persistence. Relatedly, the current study built on the emerging research on the role of the body in positive psychology (Brani et al., 2014) for optimal functioning.

Creative behaviors yield benefits not only to the organization but also to employees themselves, i.e., stimulate positive organizational change (Maimone & Sinclair, 2014) and propel individual learning (Parboteeah et al., 2015). Moreover, learning and creativity have significant implications for management and leadership (Isaksen, 2019). In addition to the existing techniques tested in organizations, such as brainstorming, attribute listing, and morphological analysis (Klijn & Tomic, 2010), our study posits YBP as a potential tool to strengthen CPS. Effective knowledge-sharing among peers at the workplace equips them to discover and implement novel solutions to organizational problems (Chiang et al., 2015). Underlying this association is the quality of relationships marked by close and personal connections (De Clercq et al., 2011). By focusing on the role of YBP in cultivating ST, the present study has implications for nurturing an environment of collaboration and cooperation for knowledge-sharing and CPS.

Limitations & Future Scope

First, our study focused broadly on examining the impact of a holistic intervention (YBP) on CPS ability. Following from this, the specific results in terms of creative outcomes were not measured directly, which can be taken up in future research. Second, the variables were measured via self-report. However, future studies can include multiple sources (peers) of data to make the study more robust. Future research may explore other pathways through which contemplative practices strengthen CPS capac-

ity. For example, cultivation of compassion and social harmony integral to YBP are crucial to building an environment of trust and collaboration that promote CPS.

References

- Amabile, T. M. & Pillemer, J. (2012), "Perspectives on the Social Psychology of Creativity", *The Journal of Creative Behavior*, 46(1): 3-15.
- Anderson, J. C. & Gerbing, D. W. (1988), "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach", *Psychological Bulletin*, 103(3): 411-23.
- Anderson, N., Potocnik, K. & Zhou, J. (2014), "Innovation and Creativity in Organizations: A State-of-the-science Review, Prospective Commentary, and Guiding Framework", *Journal of Management*, 40(5): 1297-1333
- Basadur, M. I. N., Runco, M. A & Vega, L. A. (2000), "Understanding How Creative Thinking Skills, Attitudes and Behaviors Work Together: A Causal Process Model", *The Journal of Creative Behavior*, 34(2): 77-100.
- Brani, O., Hefferon, K., Lomas, T., Ivtzan, I. & Painter, J. (2014), "The Impact of Body Awareness on Subjective Wellbeing: The Role of Mindfulness", *International Body Psychotherapy Journal*, 13(1): 95-107.
- Büssing, A., Hedtstück, A., Khalsa, S. B. S., Ostermann, T. & Heusser, P. (2012a), "Development of Specific Aspects of Spirituality During a 6-month Intensive Yoga Practice", *Evidence-Based Complementary and Alternative Medicine*, 2981523: 1-7, doi: 10.1155/2012/9815
- Büssing, A., Michalsen, A., Khalsa, S. B. S., Telles, S. & Sherman, K. J. (2012b), "Effects of Yoga on Mental and Physical Health: a Short Summary of Reviews", *Evidence-based Complementary and Alternative Medicine*, 165410: 1-7. doi: 10.1155/2012/165410
- Carmeli, A., Gelbard, R. & Reiter-Palmon, R. (2013), "Leadership, Creative Problem-solving Capacity, and Creative Performance: The Importance of Knowledge Sharing", *Human Resource Management*, 52(1): 95-121.
- Chiang, Y. H., Hsu, C. C. & Shih, H. A. (2015), "Experienced High Performance Work System, Extroversion Personality, and Creativity Performance", *Asia Pacific Journal of Management*, 32(2): 531-49.
- Chin, S. T. S., Raman, K., Yeow, J. A. & Eze, U. C. (2012), "Relationship Between Emotional Intelligence and Spiritual Intelligence in Nurturing Creativity and Innovation among Successful Entrepreneurs: A Conceptual Framework", *Procedia-Social and Behavioral Sciences*, 57: 261-67.
- Colzato, L. S., Szapora, A. & Hommel, B. (2012), "Meditate to Create: The Impact of Focused-Attention and Open-monitoring Training on Convergent and Divergent Thinking", *Frontiers in Psychology*, 3: 116.
- Corner, P. D. (2009), "Workplace Spirituality and Business Ethics: Insights from an Eastern Spiritual Tradition", *Journal of Business Ethics*, 85(3): 377-89.
- Corry, D. A. S., Mallett, J., Lewis, C. A. & Abdel-Khalek, A. M. (2013), "The Creativity-spirituality Construct and Its Role in Transformative Coping", *Mental Health, Religion & Culture*, 16(10), 979-90.
- Csikszentmihalyi, M. (1997), *Flow and the Psychology of Discovery and Invention*, Harper Collins, New York
- Dagar, C. & Pandey, A. (2020), "Well-Being at Workplace: A Perspective from Traditions of Yoga and Ayurveda", in S. K. Dhiman (Ed.), *The Palgrave Handbook of Workplace Well-Being*, Palgrave Macmillan, Cham
- Daubenmier, J. J. (2005), "The Relationship of Yoga, Body Awareness, and Body Respon-

- siveness to Self-objectification and Disordered Eating”, *Psychology of Women Quarterly*, 29(2): 207-19.
- De Clercq, D., Thongpapanl, N., & Dimov, D. (2011). A Closer Look at Cross-Functional Collaboration and Product Innovativeness: Contingency Effects of Structural and Relational Context. *Journal of Product Innovation Management*, 28(5), 680-697.
- De Dreu, C. K., Baas, M. & Nijstad, B. A. (2008), “Hedonic Tone and Activation Level in the Mood-creativity Link: Toward a Dual Pathway to Creativity Model”, *Journal of Personality and Social Psychology*, 94(5): 739-56.
- De Dreu, C. K., Baas, M. & Nijstad, B. A. (2012), “The Emotive Roots of Creativity: Basic and Applied Issues on Affect and Motivation,” in M. D. Mumford (Ed.), *Handbook of Organizational Creativity*, Academic Press, New York
- Ding, X., Tang, Y. Y., Tang, R. & Posner, M. I. (2014), “Improving Creativity Performance by Short-term Meditation”, *Behavioral and Brain Functions*, 10(1): 1-8.
- Feuerstein, G. (2011), *The Encyclopedia of Yoga and Tantra*, Boston: Shambhala
- Fiori, F., David, N. & Aglioti, S. M. (2014), “Processing of Proprioceptive and Vestibular Body Signals and Self-transcendence in Ashtanga Yoga Practitioners”, *Frontiers in Human Neuroscience*, 8: 734.
- Florida, R. & Goodnight, J. (2005), “Managing for Creativity”, *Harvard Business Review*, 83(7): 124.
- Fornell, C. & Larcker, D. F. (1981), “Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics”, *Journal of Marketing Research*, 18(3): 382–88.
- Fredrickson, B. L. (2001), “The Role of Positive Emotions in Positive Psychology: The Broaden-and-build Theory of Positive Emotions”, *American Psychologist*, 56(3): 218-26
- Fresco, D. M., Moore, M. T., van Dulmen, M. H., Segal, Z. V., Ma, S. H., Teasdale, J. D. & Williams, J. M. G. (2007), “Initial Psychometric Properties of the Experiences Questionnaire: Validation of a Self-report Measure of Decentering”, *Behavior Therapy*, 38(3): 234-46.
- Fuller, C. M., Simmering, M. J., Atinc, G., Atinc, Y. & Babin, B. J. (2016), “Common Methods Variance Detection in Business Research”, *Journal of Business Research*, 69(8): 3192-98.
- George, J. M. (2007), “Creativity in Organizations”, *Academy of Management Annals*, 1(1): 439-77.
- Gothe, N., Pontifex, M. B., Hillman, C. & McAuley, E. (2013), “The Acute Effects of Yoga on Executive Function”, *Journal of Physical Activity and Health*, 10(4): 488-95.
- Grant, A. M. & Hofmann, D. A. (2011), “It’s Not All about Me: Motivating Hand Hygiene among Health Care Professionals by Focusing on Patients”, *Psychological Science*, 22(12): 1494-99.
- Griera, M. (2017), “Yoga in Penitentiary Settings: Transcendence, Spirituality, and Self-improvement”, *Human Studies*, 40(1): 77-100.
- Haas, J. (1996), *The Relationship of Somatic Awareness to Creative Process: An Experimental Phenomenological Study*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses Database. (UMI No. 9638966)
- Hair, J. F. J., Anderson, R. E., Tatham, R. L. & Black, W. C. (2009), *Multivariate Data Analysis* (7th ed.), Prentice Hall, Saddle River, NJ
- Hao, N., Xue, H., Yuan, H., Wang, Q. & Runco, M. A. (2017), “Enhancing Creativity: Proper Body Posture Meets Proper Emotion”, *Acta Psychologica*, 173: 32-40.
- Herrick, C. M. & Ainsworth, A. D. (2000), “Invest in Yourself: Yoga as a Self-Care Strategy. *Nursing Forum*, 35 (2): 32-36.

- Hoff, E. V., Carlsson, I. M. & Smith, G. J. W. (2012), "Personality", in M. D. Mumford (Ed.), *Handbook of Organizational Creativity*, Academic Press, New York
- Horan, R. (2009), "The Neuropsychological Connection Between Creativity and Meditation", *Creativity Research Journal*, 21(2-3): 199-222.
- Hu, L. T. & Bentler, P. M. (1999), "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives", *Structural Equation Modeling: a Multidisciplinary Journal*, 6(1): 1-55.
- Isaksen, S. G. (2019), "Unleashing Creative Talent in Organizations—Linking Learning and Creativity through Creative Problem-solving. In M. D. Mumford & E. M. Todd (Eds.) *Creativity and Innovation in Organizations*, Routledge, New York
- Isen, A. M., Daubman, K. A. & Nowicki, G. P. (1987), "Positive Affect Facilitates Creative Problem Solving", *Journal of Personality and Social Psychology*, 52(6): 1122-31.
- Iyengar, B. K. S. (2008), *Yoga: The Path to Holistic Health*, Dorling Kindersley, London
- Jaussi, K. S., Randel, A. E. & Dionne, S. D. (2007), "I am, I think I can, and I do: The Role of Personal Identity, Self-efficacy, and Cross-application of Experiences in Creativity at Work", *Creativity Research Journal*, 19(2-3): 247-58.
- Johnstone, B., Cohen, D., Konopacki, K. & Ghan, C. (2016), "Selflessness as a Foundation of Spiritual Transcendence: Perspectives from the Neurosciences and Religious Studies", *The International Journal for the Psychology of Religion*, 26(4): 287-303.
- Karwowski, M. & Soszynski, M. (2008), "How to Develop Creative Imagination? Assumptions, Aims and Effectiveness of Role Play Training in Creativity (RPTC)", *Thinking Skills and Creativity*, 3(2): 163-71.
- Kirk, K. M., Eaves, L. J. & Martin, N. G. (1999), "Self-transcendence as a Measure of Spirituality in a Sample of Older Australian Twins", *Twin Research and Human Genetics*, 2(2): 81-87.
- Klijin, M. & Tomic, W. (2010), "A Review of Creativity within Organizations from a Psychological Perspective", *Journal of Management Development*, 29(4):322-43.
- Kline, R. B. (2015), *Principles and Practice of Structural Equation Modeling.*, Guilford publications., New York
- Mägi, K., Kikas, E. & Soodla, P. (2018), "Effortful Control, Task Persistence, and Reading Skills". *Journal of Applied Developmental Psychology*, 54: 42-52.
- Maimone, F. & Sinclair, M. (2014), "Dancing in the Dark: Creativity, Knowledge Creation and (emergent) Organizational Change", *Journal of Organizational Change Management*, 27(2): 344-61.
- Maslow, A. H. (1969), "Various Meanings of Transcendence", *Journal of Transpersonal Psychology*, 1(1): 56-66.
- Mehling, W. E., Price, C., Daubenmier, J. J., Acree, M., Bartmess, E. & Stewart, A. (2012), "The Multidimensional Assessment of Interoceptive Awareness (MAIA)", *PloS one*, 7(11), e48230.
- Mehling, W. E., Wrubel, J., Daubenmier, J. J., Price, C. J., Kerr, C. E., Silow, T. & Stewart, A. L. (2011), "Body Awareness: a Phenomenological Inquiry into the Common Ground of Mind-Body Therapies", *Philosophy, Ethics, and Humanities in Medicine*, 6(1): 6.
- Müller, B. C., Gerasimova, A. & Ritter, S. M. (2016), "Concentrative Meditation Influences Creativity by Increasing Cognitive Flexibility", *Psychology of Aesthetics, Creativity, and the Arts*, 10(3): 278.
- Mumford, M. D. & Hunter, S. T. (2005), "Innovation in Organizations: A Multi-level Perspective on Creativity", *Research in multi-level issues*, 4(05): 9-73.

- Mumford, M. D., Medeiros, K. E. & Partlow, P. J. (2012), "Creative Thinking: Processes, Strategies, and Knowledge", *The Journal of Creative Behavior*, 46(1): 30-47.
- Oppezzo, M. & Schwartz, D. L. (2014), Give Your Ideas Some Legs: The Positive Effect of Walking on Creative Thinking, *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40(4): 1142.
- Parboteeah, K. P., Hoegl, M. & Muethel, M. (2015), "Team Characteristics and Employees' Individual Learning: A Cross-level Investigation", *European Management Journal*, 33(4): 287-95.
- Reed, P. G. (2013), "Theory of Self-transcendence", in M. J. Smith, P. R. Liehr (Eds.), *Middle Range Theory for Nursing* (3rd ed), Springer, New York
- Rogers, M. E. (1980), *A Science of Unitary Man*", in J. P. Riehl & C. Roy (Eds.), *Conceptual Models for Nursing Practice* (2nd ed). Appleton-Century-Crofts, New York
- Sadler-Smith, E. & Shefy, E. (2007), "Developing Intuitive Awareness in Management Education", *Academy of Management Learning & Education*, 6(2): 186-205.
- Santanen, E. L., Briggs, R. O. & Vreede, G. J. D. (2004), "Causal Relationships in Creative Problem Solving: Comparing Facilitation Interventions for Ideation", *Journal of Management Information Systems*, 20(4): 167-98.
- Scott, G. M., Lonergan, D. C. & Mumford, M. D. (2005), "Conceptual Combination: Alternative Knowledge Structures, Alternative Heuristics", *Creativity Research Journal*, 17(1): 79-98.
- Scott, G., Leritz, L. E. & Mumford, M. D. (2004), "The Effectiveness of Creativity Training: A Quantitative Review", *Creativity Research Journal*, 16(4): 361-88.
- Shaw, J. A. (2005), "A Pathway to Spirituality", *Psychiatry: Interpersonal and Biological Processes*, 68(4): 350-62.
- Sternberg, R. J. & Lubart, T. I. (1996), "Investing in Creativity", *American Psychologist*, 51(7), 677.
- Stone, M. (2009), *Yoga for a World Out of Balance: Teachings on Ethics and Social Action*, Shambhala Publications, Boston
- Szarucki, M. (2013), "Model of Method Selection for Managerial Problem Solving in an Organization", *Business, Management and Education*, 11(1): 168-87.
- Tackney, C. T., Chappell, S., Harris, D., Pavlovich, K., Egel, E., Major, R., & Stoner, J. (2017), "Management, Spirituality, and Religion (MSR) Ways and Means: A Paper to Encourage Quality Research", *Journal of Management, Spirituality & Religion*, 14(3): 245-54.
- Taneja, D. K. (2014), "Yoga and Health", *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, 39(2): 68.
- Telles, S., Singh, N., Bhardwaj, A. K., Kumar, A. & Balkrishna, A. (2013), "Effect of Yoga or Physical Exercise on Physical, Cognitive and Emotional Measures in Children: a Randomized Controlled Trial", *Child and Adolescent Psychiatry and Mental Health*, 7(1): 37.
- Tellhed, U., Daukantaite, D., Maddux, R. E., Svensson, T. & Melander, O. (2019), "Yogic Breathing and Mindfulness as Stress Coping Mediate Positive Health Outcomes of Yoga". *Mindfulness*, 10(12): 2703-15.
- Villemure, C., Ceko, M., Cotton, V. A. & Bushnell, M. C. (2014), "Insular Cortex Mediates Increased Pain Tolerance in Yoga Practitioners", *Cerebral Cortex*, 24(10): 2732-40.
- Wang, C. W. & Horng, R. Y. (2002), "The Effects of Creative Problem-solving Training on Creativity, Cognitive Type and R&D Performance", *R&D Management*, 32(1):35-45.
- Whetten, D. A. & Cameron, K. S. (2005), *Developing Management Skills* (6th ed.), Prentice Hall.

- Wink, P. & Helson, R. (1997), "Practical and Transcendent Wisdom: Their Nature and Some Longitudinal Findings", *Journal of Adult Development*, 4(1): 1-15.
- Woodyard, C. (2011), "Exploring the Therapeutic Effects of Yoga and Its Ability to Increase Quality of Life", *International Journal of Yoga*, 4(2): 49.

Appendix A

Yoga Based Practices (YBP)- Duration 25 minutes approx.)

The practices include the following:

1. Unfreezing through shaking of the body and body tapping: 3 minutes
 2. Asanas: Vrikshasana (tree-pose), Pada-Hasthasana (hand-to-feet pose) and Trikonasana (triangle-pose): 3 minutes
 3. Pranayama: 12-14 minutes
 - a. deep breathing (dirgha pranayama): 8-10 slow-deep long inhalations and exhalations
 - b. high-frequency yoga breathing (HFYB; KapalaBhati): 3 x 48 high-frequency exhalations
 - c. alternate nostril breathing (Anulom-Vilom): 5 Minutes
 - d. breathing with humming (Bhramari): 5 rounds
 4. Meditation: body scan and sitting meditation (bringing back focus of attention to the breath): 5-6 minutes
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