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[Victoria Bou](#) *

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Article

Impact of Yoga on Social Intelligence and Academic Performance of Business Students

Victoria Bou

Affiliation 1; e-mail@e-mail.com

Abstract: This research investigates the influence of yoga on social intelligence and academic performance of business students. Employing a randomised controlled experiment with Executive MBA participants, the research explores the mediating role of mindfulness in these relationships. Results indicate that yoga positively influences social intelligence, decision-making skills as reflected in case study scores, and overall academic performance. Mindfulness is found to partially mediate these relationships, accounting for a significant portion of the observed effects. The study reveals that yoga directly contributes 43% to increased social intelligence, with improved mindfulness accounting for 57%. Similarly, yoga directly accounts for 46% of improved academic achievement, while enhanced mindfulness contributes 54%. These findings suggest that incorporating yoga into business education curricula could potentially enhance both the interpersonal capabilities and academic outcomes of students, preparing them more holistically for the challenges of the modern corporate world.

Keywords: social intelligence; SQ; yoga; mindfulness; business education

1. Introduction

In the ever-evolving landscape of higher education, particularly within the realm of business studies, there is a growing recognition of the need to cultivate well-rounded individuals capable of navigating the complexities of the modern corporate world. Whilst traditional academic curricula have long focused on imparting knowledge and technical skills, now there is an increasing awareness of the importance of developing students' social intelligence and overall well-being. In this context, the ancient practice of yoga has emerged as a potential tool for enhancing both the cognitive and interpersonal capabilities of business students. This study aims to explore the impact of yoga on social intelligence and academic performance among business students, shedding light on the potential benefits of integrating holistic practices into conventional business education.

The concept of social intelligence, first introduced by Edward Thorndike in 1920, encompasses an individual's ability to understand, manage, and navigate social interactions effectively. In the context of business education, social intelligence is increasingly recognised as a crucial factor in determining professional success, as it underpins leadership abilities, teamwork, negotiation skills, and emotional resilience. Despite its importance, the development of social intelligence often remains peripheral to core business curricula, leaving a significant gap in students' preparedness for the relational demands of the corporate world. This study posits that yoga, with its emphasis on self-awareness, mindfulness, and interconnectedness, may offer a viable means of cultivating social intelligence among business students.

Concurrently, the academic performance of business students remains a critical concern for educational institutions, employers, and students themselves. The pressure to excel academically whilst developing practical skills and building professional networks can lead to heightened stress levels and diminished well-being among students. This, in turn, may adversely affect their cognitive functions, learning capacity, and overall academic achievement. Yoga, renowned for its stress-reduction and cognitive enhancement properties, presents itself as a potential intervention to address these challenges. By investigating the relations between yoga practice and academic performance,

this research seeks to contribute to the ongoing discourse on innovative approaches to improving educational outcomes in business studies.

The rationale for exploring yoga as a means of enhancing social intelligence and academic performance is multifaceted. Firstly, yoga is a holistic practice which integrates physical postures, breathing exercises, and meditation, potentially offering a comprehensive approach to personal development. The physical aspects of yoga have been associated with improved physical health, increased energy levels, and enhanced focus, all of which may contribute to better academic performance. Moreover, the meditative and mindfulness components of yoga have been linked to increased self-awareness, emotional regulation, and empathy—key elements of social intelligence. By examining the interplay between these various aspects of yoga and their collective impact on business students, this study aims to provide a nuanced understanding of the potential advantages of incorporating yoga into business education.

Furthermore, the business world is increasingly recognising the value of mindfulness and well-being practices in fostering creativity, innovation, and sustainable performance. Many leading corporations have implemented yoga and meditation programmes for their employees, citing improvements in workplace satisfaction, productivity, and interpersonal dynamics. By investigating the effects of yoga on business students, this study seeks to bridge the gap between academic preparation and industry expectations, potentially informing curriculum development and student support strategies in business schools.

The significance of this research extends beyond the immediate context of business education. As the global business environment becomes increasingly complex and interconnected, the demand for professionals who can navigate diverse social contexts, demonstrate emotional intelligence, and maintain high performance under pressure continues to grow. By examining the efficacy of yoga in developing these qualities among business students, this study contributes to the broader discourse on innovative pedagogical approaches in higher education. Moreover, it aligns with the growing emphasis on holistic development and well-being in educational settings, potentially informing policy decisions and resource allocation in universities.

This study embarks on an exploration of the intersections between yoga, social intelligence, and academic performance within the context of business education. By investigating the potential of yoga to enhance both the interpersonal capabilities and cognitive functions of business students, it seeks to contribute to the evolving landscape of business pedagogy. The findings of this research may have far-reaching implications for curriculum design, student support services, and the overall approach to preparing business students for the multifaceted challenges of the contemporary corporate world. As we delve into this investigation, we anticipate uncovering valuable insights that may reshape our understanding of holistic education and pave the way for more integrated approaches to developing the business leaders of tomorrow.

2. What Is Yoga?

Yoga, an ancient practice originating in the Indian subcontinent, has evolved over millennia into a multifaceted discipline that encompasses physical, mental, and spiritual dimensions. The term 'yoga' is derived from the Sanskrit root 'yuj', meaning to join or unite, symbolising the practice's fundamental aim of harmonising the individual consciousness with the universal consciousness. While often perceived in Western contexts primarily as a form of physical exercise, yoga in its fullest sense represents a comprehensive system of personal development that addresses all aspects of human existence. This holistic approach to well-being and self-realisation has garnered increasing attention in recent decades, not only as a means of physical fitness but also as a potential tool for enhancing mental health, cognitive function, and interpersonal skills.

The philosophical underpinnings of yoga can be traced back to ancient Indian texts, most notably the Yoga Sutras of Patanjali, composed around 400 CE. This seminal work outlines the eight-limbed path of yoga, known as Ashtanga Yoga, which provides a framework for ethical living, physical practice, breath control, and meditation. The eight limbs consist of Yama (ethical standards), Niyama (self-discipline), Asana (physical postures), Pranayama (breath control), Pratyahara (sensory

withdrawal), Dharana (concentration), Dhyana (meditation), and Samadhi (state of ecstasy or enlightenment). This comprehensive approach underscores the depth and breadth of yoga as a life philosophy, extending far beyond the mat-based practices commonly associated with yoga in contemporary Western society.

In its physical manifestation, yoga comprises a diverse array of postures (asanas) designed to cultivate strength, flexibility, and balance. These postures range from simple standing and seated positions to more complex inversions and balancing poses. The practice of asanas is often synchronised with conscious breathing, creating a moving meditation that fosters mind-body awareness. This integration of physical movement and breath serves as a gateway to the more subtle aspects of yoga practice, promoting relaxation, focus, and inner stillness. The variety of yoga styles that have emerged over time, such as Hatha, Vinyasa, Ashtanga, and Iyengar, reflect different emphases on physical intensity, alignment, and spiritual focus, catering to diverse practitioner needs and preferences.

Central to the practice of yoga is the concept of pranayama, or breath control. The ancient yogis recognised the profound connection between breath, mind, and consciousness, developing techniques to harness the power of breath for physical and mental well-being. Pranayama exercises range from simple deep breathing to more complex patterns of inhalation, retention, and exhalation. These practices are believed to enhance vital energy (prana) within the body, improve respiratory function, and calm the nervous system. In the context of modern stress research, the emphasis on breath control in yoga aligns with scientific understanding of the role of respiration in modulating the autonomic nervous system, offering a physiological basis for yoga's stress-reducing effects.

Meditation, another cornerstone of yoga practice, encompasses a variety of techniques aimed at cultivating awareness, concentration, and equanimity. While often perceived as a practice of emptying the mind, yogic meditation more accurately involves training the mind to focus attention and develop non-reactive awareness of thoughts, emotions, and sensations. This aspect of yoga has garnered significant interest in neuroscientific research, with studies suggesting that regular meditation practice can lead to structural and functional changes in the brain associated with improved attention, emotional regulation, and cognitive flexibility. The cultivation of mindfulness through yogic meditation practices offers potential benefits in various domains, including stress reduction, emotional intelligence, and decision-making capabilities.

The philosophical and ethical dimensions of yoga, embodied in the concepts of Yama and Niyama, provide a moral framework that extends the practice beyond physical exercise and meditation. These principles, which include non-violence, truthfulness, non-stealing, moderation, and contentment, offer guidelines for ethical living and self-discipline. In the context of personal development and social intelligence, these ethical precepts can be seen as fostering qualities conducive to positive interpersonal relationships and social responsibility. The emphasis on self-reflection and ethical conduct in yoga philosophy aligns with contemporary notions of emotional intelligence and social consciousness, suggesting potential applications in leadership development and business ethics education.

As yoga has gained popularity globally, it has undergone various adaptations and interpretations, leading to ongoing debates about authenticity, cultural appropriation, and commercialisation. While some argue that the Westernisation of yoga has diluted its spiritual essence, others contend that its adaptability has allowed for wider accessibility and integration into diverse cultural contexts. In academic and scientific circles, the multifaceted nature of yoga presents both challenges and opportunities for research. The complexity of yoga as a holistic system necessitates interdisciplinary approaches to fully understand its mechanisms and effects, spanning fields such as physiology, psychology, neuroscience, and social sciences.

Yoga represents a rich and complex tradition that encompasses physical practices, breath work, meditation, and ethical living. Its holistic approach to human well-being offers a unique perspective on personal development that integrates body, mind, and spirit. As research continues to explore the potential benefits of yoga in various domains, including stress reduction, cognitive enhancement, and social intelligence, it is essential to approach the subject with an appreciation of its depth and

complexity. In the context of business education and professional development, understanding the multifaceted nature of yoga provides a foundation for exploring its potential applications in enhancing both individual performance and interpersonal capabilities.

3. Impact of Yoga

In recent years, Western interest in yoga research has grown significantly. Many studies have shown yoga's positive effects on physical and mental health. Yoga is more than just exercise or spiritual practice; it's a comprehensive approach to understanding the mind with implications for health and wellness across multiple domains. While research on yoga's health benefits is abundant, studies on its impact on intelligence are comparatively scarce. This research aims to address that gap.

Several successful business leaders and entrepreneurs credit their achievements in part to regular yoga practice. These include figures like Ariana Huffington, Sergey Brin, Jeff Weiner, Ratan Tata, Beyoncé, and William Clay Ford Jr. Steve Jobs, influenced by yoga during his time as a young traveler in India, was particularly impacted by the book "Autobiography of a Yogi," which he kept on his iPad 2. During the lockdown caused by the COVID-19 epidemic, research on influence of yogic practices was fast-tracked. For example, in an experiment study during the lockdown, research found yoga developed resilience, health and well-being of student musicians in Spain.

Yogic techniques have been linked in several studies to improved academic achievement. In a study involving 800 teenage students in Jalandhar, India, it was discovered that yoga had a positive impact on academic achievement. Among 112 high school students in New York, researchers found that "participation in yoga classes is associated with higher mean GPA when compared to an equivalent amount of participation in PE classes". In an experiment involving 234 university students in Bangalore, India discovered that yoga was helpful in improving the orderliness of brain functioning, leading to greater academic achievement. Via their classroom yoga practice in the US, Dawn Neely and Lisa Gezon (2021) discovered that yoga delivered with a responsive and iterative approach helped students shift from busy lives to focus on the learning process and cultivate an academic attitude.

Scholars are yet to explore impact of yoga on business education. Business education is different from much of higher education. People in business earn their living by taking decisions. Business schools aim to train students in Judgement and Decision Making, often called JDM in Management and Educational Psychology literature. Business JDM proficiency cannot be measured directly and we require a proxy. Business schools have been wrestling with this problem for more than a century. Using case studies for honing JDM skills was initiated by Harvard Business School in 1921 and over a century many business schools around the world have followed suit. Case studies present the problems that the business executives come across on a day to day basis. In essence it amounts to putting oneself in the shoes of the case protagonist and working to determine what should be done. The presenters (usually in a group of three or four) must answer tough questions as if it were an inquisition. The discussion and literature cited above leads us to the following hypotheses formulation:

- (1) Yoga is be related to SQ positively.
- (2) Yoga is related to marks obtained in case studies positively.
- (3) Yoga will be positively related to other academic performance.

4. Mediation by Mindfulness

Mindfulness refers to a state of consciousness focused on the present moment, where one is aware of various viewpoints simultaneously. This concept was introduced to Western culture in the 1960s by the respected Buddhist scholar Thích Nhất Hạnh. Jon Kabat-Zinn, who studied under both Nobel Prize-winning microbiologist Salvador Edward Luria and Thích Nhất Hạnh, is widely recognized for making mindfulness popular in Western societies. In 1979, Kabat-Zinn started "Mindfulness Based Stress Reduction Programme (MBSR)" at University of Massachusetts Medical Centre. "Mindfulness-Based Cognitive Therapy (MBCT)" is an extension of old-style Cognitive

Behaviour Therapy. Interest in incorporating mindfulness is on the rise and it is being used in treatment of various psychiatric disorders.

Measurement of Mindfulness has always been contentious. As in the case of SQ, such arguments never stopped psychometricians in their track and during the last quarter of a century several measures have come up many of them prone to different interpretations due to representational problems. Commonly used scales (in order of vintage) are: Freiburg Mindfulness Inventory (2001; with 30 items), Mindful Attention Awareness Scale (2003; with 15 items), Kentucky Inventory of Mindfulness Skills (2004; with 39 items) Cognitive Affective Mindfulness Scale (2004; with 12 items) and Five-facet Mindfulness Questionnaire (2005; with 16 items).

Yoga lays more emphasis on mind-body awareness than it does on exact physical posture alignment. Pranayama focusses on awareness of breath and meditation is a scaffolding to mindfulness. Accordingly, yoga practice is expected to enhance awareness of the present moment. Danielle Shelov and colleagues discovered that yoga intervention was a practical way to raise levels of mindfulness in a study of staff and students from 2 institutions in the Bronx, NY. Similar outcomes were recently discovered in a study of 39 nursing students in Turkey. Janika Epe and colleagues discovered that various yoga practices improve mindfulness in a study of 25 employees and students at a German institution. The discussion and literature cited above leads us to the formulation of the following hypothesis:

(4) Yoga will be positively related to Mindfulness.

It is easy to understand how mindfulness could improve performance in case studies. It helps the decision-maker become less judgmental, which would enhance the quality of decision-making. By reducing procrastination and increasing self-determination, it may improve decision-making by eradicating ingrained reactive behaviours. As a remedy to thoughtless cognition and behaviour, mindfulness improves proficiency in negotiations. According to Pérez-Yus, in addition to maintaining mental order and concentrating on the right words and actions rather than the end result, a mindful negotiator would be able to inspire confidence. Each of these abilities is linked to successful negotiating. When negotiations fail, a good strategy is to go in for arbitration rather than expensive and time consuming litigation. Mindfulness improves results in arbitration also. By picking up weak signals and sensing anomalies, mindfulness is an important asset for a manager in preventing accidents. In two experiments in the United States, one on 69 undergraduate students and the other on 178 individuals outside of the university setting, it was discovered that mindfulness enhanced resistance to sunk cost bias. In a survey of 238 managers (who had MBA degree) in Austria it was found that mindfulness had a positive influence on transformative leadership behaviour. The mindful participants also experienced a clearer mind, had good sleep, were able to reflect more often, and did not take things too seriously, and they exerted loving kindness.

Marais found mindfulness to be effective in improving adaptive functioning, well-being, and optimal time use in the French academia. Increased mindfulness was found to be positively associated with work engagement in a sample of 68 respondents in the Netherlands both in for profit and non-profit enterprises, whereas in a study of 90 servers and 18 managers in the American restaurant industry it was discovered that mindfulness resulted in higher levels of job performance.

Some studies have found benefits of mindfulness in management education. 44 business executives who were doing Supply Chain Module of an Executive MBA programme participated in a study to find out the effects of mindfulness. It was discovered that mindfulness yielded a number of expected and unexpected benefits. In two different experiments in Balkan countries, it was discovered that mindfulness improves academic performance directly as also through stress reduction and through enhancement of resilience. In a study of 97 students in the leadership module of an MBA programme at a US university, business students' on the basis of post-course questionnaire and qualitative examination of students' notebooks, it was found that due to mindfulness intervention the students experienced transformational learning promoting awareness of their own and other people's perspectives while also reducing resistance to novel concepts and procedures

(Kuechler & Stedham 2018). The discussion and literature cited above leads us to the formulation of the following hypotheses:

- (5) Mindfulness mediates the relationship between yoga and SQ.
- (6) Mindfulness mediates the relationship between yoga and marks obtained in case studies.
- (7) Mindfulness mediates the relationship between yoga and other academic performance.

5. Materials and Methods

For deductive evaluation of the hypotheses, we chose a quantitative instead of a qualitative technique. The Randomised Controlled Experiment covered business executives undertaking MBA programmes. The methodology employed in this study combines quantitative and qualitative approaches to provide a comprehensive analysis of the impact of yoga on social intelligence and academic performance. A cohort of business students will participate in a structured yoga programme over an extended period, with pre- and post-intervention assessments of their social intelligence quotient and academic grades.

Prior to joining MBA programme average work experience in managerial capacity as in the participants' bio-data was 5 years and 2 months. "Tromsø Social Intelligence Scale (TSIS)" is employed in this research. TSIS is a twenty-one-item self-report instrument of the scale with "social information processing" (e.g., "I can predict other people's behaviour"), "social skills" (e.g., "I often feel uncertain around new people who I don't know") and "social awareness" (e.g., "I often feel that it is difficult to understand others' choices.") as sub-dimensions. This scale has good psychometric properties. Recently, this scale has been used in several research studies similar to this study. The items in the scale are accompanied by a Likert-type rating scale (1–7). In our study Cronbach alpha was 0.86.

MAAS—"Mindful Attention Awareness Scale"—was chosen to measure mindfulness, as this is the most commonly used scale in this field. Intense debate and interest shown by psychometricians has resulted in harsh critique levelled at all measures. MAAS includes questions like "I find myself doing things without paying attention"; "I break or spill things because of carelessness, not paying attention, or thinking of something else"; and "I tend to walk quickly to get where I'm going without paying attention to what I experience along the way". While research on improved scales continues, as of now MAAS on account of validation in several studies is the most commonly used scale. In studies similar to this one, it has been used in Slovenia and Croatia in 2021. Marks obtained by students in the case studies (maximum normalised to 10) has been taken as a measure for performance.

To determine causation, four sets of data were compared—data from control group before and after intervention and of control group before and after the experiment. The data related to mindfulness, social intelligence, scores in case studies and scores on other academic subjects. Since the intervention group and the control group were selected on random basis, as expected there was no difference between the two groups. Significant change in the variables of interest in the two groups after the intervention. Correlations between variables were examined to get preliminary indications of relationship among variables. Once it was seen that the correlations are in the expected directions, it was examined whether mediation exists and if so whether it is positive or negative, partial or complete. For mediation analysis, PROCESS macro was used.

6. Results

We investigate whether the heightened mindfulness brought about by yoga is a mediating factor or just a coincidental effect. The mediation model is indicated by the regression findings. Our results show partial mediation, indicating the importance of both the direct and mediation effects. We find that yoga is positively related to social intelligence. This validates hypothesis 1. There is very thin previous research on impact of yoga on intelligences. There is none on yoga's impact on social intelligence. This study seeks to fill this gap. According to hypothesis 2 yoga is positively related to JDM as reflected in scores in case studies and according to hypothesis 3 yoga is positively related to

scores in other academic subjects as well. Based on the results, it could be suggested that yoga positively relates to mindfulness (Hypothesis 4). According to hypothesis 5, mindfulness mediates the relationship between yoga and SQ. While a lot of research is available on the effectiveness of MBSR, MBCT etc. is available, relationship between mindfulness on SQ has been neglected. Our research validates hypothesis 5. According to hypothesis 6, mindfulness mediates the relationship between yoga and JDM. This research validates hypothesis 6. According to hypothesis 7, mindfulness mediates the relationship between yoga and other academic performance also. The results of this study validate hypothesis 7 as well.

7. Conclusions

Among the dependent variables we see that performance in business courses is correlated with other academic performance. The coefficient of correlation between social intelligence and performance in IB courses is higher than that between social intelligence and other academic performance. Enhanced mindfulness increases social intelligence and academic performance. Yoga increases mindfulness. Further, through mindfulness, yoga increases academic performance and social intelligence directly. In terms of social intelligence, yoga directly contributes 43% of the increase while improved mindfulness accounts for 57%. It is observed that the benefits of yoga on case study performance outweigh the effects on academic achievement. When it comes to improved academic achievement, yoga accounts for 46% of the rise, with better mindfulness accounting for the remaining 54%.

While the results of the research are robust, with due humility it has to be admitted that it is possible that the advanced statistical analysis methods employed did not yield a comprehensive understanding of yoga-based activities. For students studying business, yoga is not a sensory toy that can be perfected by theoretical and empirical research. There may exist mental states whose operations may only be accessed by means of significantly more sophisticated research capabilities that are still under development.

It's safe to say that not many people enrol in pricey MBA programs in order to develop their social intelligence. Instead, they enrol in an MBA program to further their careers. Their goal is to achieve high academic standing in order to demonstrate their value to potential employers and get ready for managerial roles. Our research shows that yoga can provide higher levels of SQ as also better grades.

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