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Internet addiction, Sleep Quality and Quality of Life among Female College Students

Radhika Srivastava, Anju L. Singh
Vasanta Kanya Mahavidyalaya

Trayambak Tiwari
Banaras Hindu University, Varanasi

Internet is one of the most popular networks in the world. It also helps college students in their academics as well as social interaction. However, excessive internet use can lead to poor well-being and quality of life. The present study aims to find out the relationship between internet addiction, sleep quality and quality of life among female college going students. 120 undergraduate and post-graduate female college students of Varanasi district with age range 18 to 24 years were recruited for the present study. The results shows that there exists a strong positive correlation among internet addiction, overall sleep quality and dimensions of sleep quality which shows that as the participant becomes more addicted to internet, there is more deterioration in sleep quality. Further, there exists a strong negative correlation between internet addiction and dimensions of quality of life indicating that students with higher internet addiction are more likely to have poor physical health, psychological health, social relationships and environmental health dimensions of quality of life. Hence, it is essential to develop strategies for prevention of internet addiction for promoting good sleep quality and quality of life of female college students.

Keywords: Internet addiction, sleep quality, quality of life

Internet is considered as the most popular network and is immensely used in the world. It is an electronic network which connects people and information through computers, laptops and mobiles. According to Statista, there are 5 billion internet users which is 63% of population that globally uses internet of which 4.65 billion use it for social media (Statista, 2022a). In India there were 749 million internet users with majority accessing internet through smartphones across rural and urban population due to cheap access to internet. (Statista, 2022b).

Internet addiction and problematic internet use have been studied since the use of computer began but with the exponential rise of access to the internet by everyone, this has become a growing concern since it affects every aspect of our life. Internet addiction is excessive or poorly controlled preoccupations, urges or behaviours regarding computer use and internet access that led to impairment or distress (Shaw & Black, 2008). Maladaptive use of internet can be called internet addiction, pathological internet use, internet dependency or internet addiction disorder. With increasing access and use of internet in the present times, the importance of this addiction is immense as well as the treatment and prevention becomes necessary.

Sleep is an important aspect of life. Sleep is a reversible state of reduced awareness and responsiveness to the environment (Stores, 2001). Sleep quality is the self- satisfaction of an individual towards all the aspects of the sleep experience. Sleep quality is affected by physiological aspects like age and body mass index, psychological aspects like anxiety and stress,

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Effect of short-term Vipassana Meditation Training on Measures of Mindfulness and Attentional Network Task

Pratibha Singh, Trayambak Tiwari, Anil Kumar Yadav, Indramani L. Singh, Tara Singh, & Anju L. Singh
Banaras Hindu University, Varanasi

The present study examined the effect of Vipassana meditation practices (traditional Buddhist meditation practices) on attention network task (ANT). The objective of the study was to know the effect of traditional 10-days vipassana meditation training on the attentional performance of the participants. The second objective was to investigate whether a meditation training altered the mindfulness of participants. The present study used pre-post design and novice participants (not having any prior meditational training) were selected from the Dhamma Lakkhaṇa Vipassana Meditation Center, Lucknow, Uttar Pradesh, India. These participants were approached again after completion of 10-days meditation training. Participants response on mindfulness questionnaire was obtained on both occasions. Participants showed improvement on the dimensions of mindfulness and the attentional network test (i.e., alerting, orienting and executive functioning) after the vipassana meditation training. Findings of the study suggested that a traditional 10-days Vipassana meditation training improved mindfulness as well as attentional network task performance of the participants, irrespective of their prior experience.

Keywords: Vipassana -Meditation, Mindfulness, Attention Network task

Vipassana is one of the ancient Indian meditation technique. It has the potential to transform the human mind and character as per the ancient literature. Vipassana is a practice which is designed to gradually develop mindfulness or awareness (Gunaratana, 2002). The term mindfulness and vipassana are the synonymous form of meditation derived from Theravada Buddhism (Gunaratana, 2002). The term mindfulness comes from the Pali word sati, which means having remembering, awareness, and attention. Vipassana said to be the "moment to moment awareness". Mindfulness is cultivated in vipassana meditation often practiced by using one's attention to one's bodily sensations, emotions, thoughts and surrounding encircle.

Meditation is said to have far reaching influence on several aspects of human mind and body. The most studied topics include physiological, psychiatric, and psychological conditions (e.g., anxiety, depression, quality of life or impact on activities of daily living) or a general medical condition (Ospina, et. al., 2007). Some researchers also focused on the effect of meditation technique on cognition and neuropsychological functions. Various types of meditation techniques seem to positively influence cognitive functions. More recently Chiesa and colleagues (2011) suggested a significant improvement of selective and executive attention in early stages of meditation, which aimed at cultivation focused attention.

Meditation is a skill that train attentional system, strengthens body muscles and reinforces attentional circuits of the brain. Different meditation practices may affect different parts of brain (Brefczynski-Lewis et. al., 2007; Lutz et. al., 2009; Ives-Deliperi, Solms, & Meintjes, 2011; Leonard, et. al., 2013) and this difference is expected to be found in the functions of attentional network. Frontal lobe regions associated with executive functioning of attention were found to be activated through Buddhist inspired meditation (Vipassana). Various studies have proven that these kinds of practices improved the attentional performance (Leonard et. al., 2013; Kozasa, et. al., 2012; Hodgins & Adair, 2010; Jha, et. al., 2007).

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Effect of Working Memory Load on Anxiety-Related Attention Deficits in Executive Attention Tasks Performance: A Review

Atul K. Gangwar, Trayambak Tiwari, Tarun Mishra, Anil Kumar Yadav, Sushil K Sah,
Banaras Hindu University, Varanasi

Anju L. Singh
Vasant Kanya Mahavidyalaya, Kamachha, Varanasi

Elevated anxiety negatively affects cognitive performance on executive functions tasks, especially, inhibitory control tasks. The Performance Efficiency Theory and the Attention Control Theory (ACT) have proposed frameworks for explaining the relationship between anxiety and executive control. In the framework, ACT has proposed a few predictions regarding the relationship between anxiety and inhibitory control and set-shifting. In recent literature, some experiments have tested those predictions. Findings that emerged through this research have proposed mixed results. Some studies have supported the existing framework and some have reported results that challenge the existing framework. This review discussed the methodology and results of these studies and proposed further extension of ACT. Along with this, suggestions for future research have been discussed.

Keywords: Anxiety, Executive control, Attention Control Theory, Processing Efficiency Theory, Cognitive load

Anxiety is a highly prevalent psychological abnormality in the modern age (Bandelow & Michaelis, 2015). It is the ambiguous apprehension and worry of negative emotions and threatful stimulations (Humphreys & Revelle, 1984). This repetitive apprehension occupies the working memory resources of anxious individuals and leads to a reduction in their performance on cognitive tasks because these tasks also rely on the same working memory resource pool for their successful execution (Abushalbaq et al., 2021; Eysenck et al., 2007; Eysenck & Calvo, 1992). Eysenck and Calvo, (1992) reviewed contemporary literature which discusses anxiety-related cognitive deficits and, proposed the '*Performance Efficiency Theory*', which predicted that individuals with elevated anxiety worry about probable threatening consequences. This theory assumes that worry is the cognitive component of anxiety and recruit's central executive and transient storage of the visuospatial sketchpad and the phonological loop components of working memory (Baddeley, 1986). Based on these assumptions, it was predicted that elevated anxiety would impair the performance of the central executive mildly, which might be managed by the increased effort of the individual. Still, adding substantial extra load through changes in instruction or the addition of secondary task/s would surely impair the individual's performance on the central executive task. Further testing of these predictions, refined the PET and led to the emergence of the *Attentional Control Theory* (ACT) (Eysenck et al., 2007). Based on a

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Age-Related Changes in Executive Function Abilities: A Cross-sectional study

Trayambak Tiwari, Harshita Singh, Atul K. Gangwar, Dhanjit Sharma, Anil Kumar Yadav,
Banaras Hindu University, Varanasi

Anju L. Singh
Vasant Kanya Mahavidyalaya, Kamachha, Varanasi

Cognitive decline is a well-known aspect of the healthy aging process, which adversely affects cognitive abilities, and frequently reflects a decline in executive functioning. To gain a better knowledge of executive functions over the lifetime, a cross-sectional design was utilized to examine the age-related changes in executive function across young adults (n=20; Age range= 18 to 30 years; Mean Age = 24.85 years; S.D = 2.97) and old adults (n=20; Age range=60 to 90 years; Mean Age = 74.10 years; S.D = 7.46). The Executive Function Module of the Neuropsychological Assessment Battery was administered. The results indicate that aging has a major impact on executive functions. The older age group performed worse on Executive function tasks highlighting the challenges with planning, psychomotor speed, ineffective problem solving, diminished capacity for decision-making, lower mental flexibility and response set, and diminished generativity or verbal fluency than the young adults. The results of this study suggest that age-related differences in executive functions exist and that measuring the rate at which cognitive decline occurs can be a useful diagnostic strategy for dementia and other conditions.

Keywords: Cognitive abilities, executive function, old adults and young adults.

The term "age-related cognitive decline" describes the slow, normal reduction in cognitive function that comes with aging, especially in later adulthood. Although a certain amount of cognitive loss is thought to be a typical aspect of aging, each person's experience with the condition and its effects will differ greatly. A person's education level, genetics, lifestyle choices (food, exercise, social interaction, and cognitive stimulation), medical conditions (hypertension, diabetes, and cardiovascular disease), and exposure to environmental toxins are some of the factors that can affect the course and severity of age-related cognitive decline. The study of cognitive aging looks at these processes as people age. It looks at how people's cognition varies over time both inside and between individuals. Previous studies have demonstrated that older persons do worse than younger adults on cognitive tasks, such as attention, working memory, and episodic memory assessments (Park et al.,2009; Salthouse, 2010; Hedden, & Gabrieli, J. 2004; Grady, 2012; Craik, & Bialystok, 2006). When it comes to skills like judgment and problem-solving assessments, where they may apply their life experience and wisdom, older folks typically outperform younger adults.

Cognitive decline henceforth leads to decrease in the Executive functioning of the individuals. Executive Functions are said to stand for skills that are essential for handling new tasks and adjusting to changing

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Visual Attention and Awareness: Evidence from Priming Paradigm

Radha Agnihotri[*], Trayambak Tiwari[*], Anil Kumar Yadav*, Tarun Mishra*, Indramani L. Singh[*], Tara Singh* & Anju L. Singh[**]

Abstract

In recent years there has been several experimental findings supporting the notion that visual attention is required for perceptual representations to enter the conscious level. However, this conventional notion has been subsequently challenged citing that allocating temporal attention to a target stimulus is a necessary condition for automatic response priming. This study was intended to examine the priming effect on attention and consciousness across gender by manipulating stimulus strength, cue validity & congruency. Further, response congruency effect (RCE), facilitatory, and interference effects on reaction time measure were also checked. Fifty students with age ranged from 20 to 30 years from Banaras Hindu University were participated in the study. The experiment has two parts. In the first part, participants were subjected to subliminal condition (with extremely weak prime) whereas, second part of the experiment presented primes in the clearly visible conditions. The findings of this study suggested that participants (both male and female) perform better in visible condition than subliminal condition. Further, the congruent trials facilitate, whereas incongruent trials interfere the performance of the participants in terms of reaction time. The overall result showed that males and females both are similar in cognitive abilities, especially in visual attention and consciousness processing.

Keywords**:** *attention; awareness; mask, priming.*

Introduction

The relationship between attention and visual awareness is considered important and debated by cognitive scientists (Posner, 1994). These two facets of the brain function are inextricably linked together. Research has shown that visual perception is influenced by attention, with our awareness tied to what we pay attention to. The global neuronal workspace theory proposed a taxonomy to distinguish between conscious, non-conscious, and subconscious visual

[*]Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanas
[**]Department of Psychology, Vasant Kanya Mahavidyalaya, College admitted to the privileges Banaras Hindu University, Kamachha, Varanasi

EFFICIENCY OF ATTENTION NETWORK TASK AMONG ANXIOUS PARTICIPANTS: A MINI REVIEW

Anamika Singh[1], Trayambak Tiwari[1], Sujeet Pratap[1], Indramani L. Singh[1], Tara Singh[1], Tarun Mishra[1], Anil Kumar Yadav[1], Shreshtha Yadav[1] & Anju L. Singh[2]

ABSTRACT

The tendency to take control of the situations or falling short of it may cause anxiety. A conscious control over the ways individuals would feel or think, is reflected in anxious dispositions. Attention network performances may get characteristically influenced by state or trait anxiety. Alerting and orienting performances are facilitated by state anxiety, whereas, trait anxiety inhibits the executive control performances. In view of the fact that attention network test (ANT) has been identified as a standard tool to assess an individual's attentional networks, the present work attempts to offer an overview of attention network performance in relation to anxiety. The observations confirm the reliability of ANT for assessment of attentional networks.

INTRODUCTION

Anxiety is characterized by compromised adaptive capacities under certain specific conditions (First, M. B., France, A., & Pincus, H. A., DSM-IV-TR, 2004). It is an emotion generally accompanied by nervous behaviour and inner turmoil. This inner turmoil is manifested into difficulty in concentration, fatigue, muscular tension, nervousness, fear, apprehension, worrying and impacts the way we feel and behave and manifests into real physical symptoms. However, such manifestations, upto a certain limit, prove helpful in dealing with the real-life challenges, beyond which it may be reflected as anxiety disorder. The cognitive theories observe distinctive sensitivity to threatening stimuli being evident in terms of specific physiological and psychological components anxiety, and the need to shift the focus to these components (Sylvers, Lilienfeld & LaPrairie,2011).

State and Trait Anxiety

Both kinds of anxiety affect individuals in different manners perhaps because of their different kind of origins. According to information processing approach, environmental stimulation posing existential threat, hence bottom-up processing is responsible for state anxiety, in another situation, individual's own personal attitudes, thought patterns and coping strategies, hence top-down processing plays major role in generating anxiety to the person, is we called trait anxiety (Pacheco-Unguetti, Acosta, Callejas & Lupianez, 2010). State and trait anxiety are governed through bottom-up and top-down approach and respectively (Pacheco-Unguetti, Acosta, Merques, & Lupianez, 2011). The emotionally laden task performances reveal cognitive structure as responsible for biasness in anxiety or anxious individuals.[3] The trait anxiety is evident during the appraisal of threat related stimuli (Williams, Watts, Mac Leod, & Mathews, 1997). Low and high trait anxieties are associated with avoiding and approaching the threatening stimuli (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van ljzendoorn, 2007). However, this avoidance/approach mechanism, when examined under high levels of stress due to examination, revealed that under moderated stress situation, high trait anxiety individuals exhibit significant attentional bias for unmasked threatening stimuli during examination, where as individuals with low trait anxiety were observed with non-significant bias towards the unmasked threatening stimuli (Mogg, Bradley, & Hallowell, 1994; Bradley, Mogg, Falla, & Hamilton,1998; Bradley, Mogg, White, Groom, & de Bono, 1999),. The disengagement of attention from highly threatening stimuli is better under low trait anxiety in comparison to the high trait anxiety (Koster, Crombez, Verschuere, Van Damme & Wiersema, 2005).

[1] Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi

[2] Department of Psychology, Vasanta Kanya Mahavidyalaya, College admitted to the privileges of Banaras Hindu University, Kamachha, Varanasi

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Effects of executive task load and task time duration on time perception among young adults

Trayambak Tiwari, Vishal Yadav, Tarun Mishra, Tara Singh, Anil Kumar Yadav, Shreshtha Yadav
Banaras Hindu University, Varanasi

Anju L. Singh
Vasanta Kanya Mahavidyalaya, Kamachha, Varanasi

Time perception is a personal view of passing the time through any effort. Among all the essential elements of secondary tasks, which occur at various times of the day, several qualities significantly impact how time is perceived. The current study aims to understand better how executive task loads affect young individuals' perceptions of time in the future. A within-subject design used two executive task loads (low and high) and three-time durations (short, medium, and long). Sixty-six young individuals from the Banaras Hindu University (age range: 19–28 years, M age = 21.77 years, SD = 1.80) participated in the study. Observing time reproduction was a dependent measure to derive ratio and absolute error scores. The results show that time perception was more underestimated under high executive task loads than under low executive task loads. Further, young adults greatly underestimated the time for long task duration compared to medium and short task time duration.

Keywords: Executive load, Time estimation, Time perception, Reproduction method Task, Memory paradigm.

Observers' time perception has been predisposed to deviate from objective time depending on their actions (Buhusi & Meck, 2005). Fraisse (1984) introduced the concept of time perception. It is commonly observed that time appears to fly by when people are having a good time, whereas it appears to drag when people are bored. Time estimation does not equate to real-time. Instead, it depends on the participant's perception.

The significance of psychological time period in person life has been the subject of extensive research. Block (1990) tried to elucidate how subjective and objective timing differ when people perceive time. The duration of time exposure, which represents the present and recent past events, has been the subject of numerous studies on time perception. Although humans lack a sense concern for timing, it is claimed that cognitive and natural mechanisms account for how humans perceive time. This is so because it takes cognitive processes connected to attention and memory to estimate a specific length (Zakay & Block, 1995; Zakay & Block, 1996). According to studies of temporal perception, emotions frequently impact perceived duration (Droit-Volet & Meck, 2007).

Many types of stimuli are perceived as lasting longer than others due to temporal occurrences (Kanai et al., 2006), color (Shibasaki & Masataka, 2015; Thönes et al., 2018), and motion (Brown, 1995; Kaneko & Murakami, 2009); for example, blue stimuli are perceived as lasting longer than red stimuli (Shukla & Bapi, 2021). In addition to these stimulus qualities, studies have revealed that task-unrelated, non-temporal stimulus features(Shukla & Bapi, 2021), like stimulus amplitude (amount and range) affect how stimuli are processed in time (Oliveri et al., 2008; Xuan et al., 2007).

Task load, Attention, Duration, and performance

Clocks can precisely measure time, whereas physical, cognitive, and contextual factors influence time duration estimation. While it has been demonstrated that non-temporal tasks

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BRIEF RESEARCH REPORT
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Role of Workplace Spirituality, Empathic Concern and Organizational Politics in Employee Wellbeing: A Study on Police Personnel

Shreshtha Yadav[1], Trayambak Tiwari[1]*, Anil Kumar Yadav[1]*, Neha Dubey[2]*, Lalit Kumar Mishra[3]*, Anju L. Singh[4]* and Payal Kapoor[5]**

[1] Department of Psychology, Banaras Hindu University, Varanasi, India, [2] Department of Psychology, Rajendra College, Jai Prakash University, Chapra, India, [3] Department of Psychology, Indira Gandhi National Tribal University, Amarkantak, India, [4] Department of Psychology, Vasanta Kanya Mahavidhyalaya, Banaras Hindu University, Varanasi, India, [5] Independent Researcher, Prayagraj, India

Employee wellbeing as a central aspect of organizational growth has been widely regarded and accepted. Therefore, a considerable growth in the number of researches focusing on employee wellbeing has been comprehended in recent years. Employee wellbeing characterizes the individual's own cognitive interpretation of his/her life at work. The present study made an attempt to examine how workplace spirituality, empathic concern and organizational politics influences employee wellbeing. It was hypothesized that empathic concern mediates the relationship between workplace spirituality and employee wellbeing while organizational politics act as a moderator in this relationship. A survey was conducted on 253 employees working in Uttar Pradesh Police department (Uttar Pradesh, India). The results obtained revealed that workplace spirituality, empathic concern and employee wellbeing carries a positive association among them whereas these variables were found to be negatively correlated with organizational politics. Results also depicted that empathic concern significantly mediates between workplace spirituality and employee wellbeing. Further, moderated mediation analysis confirmed employee wellbeing as a function of workplace spirituality, empathic concern and organizational politics. The present study has put forward several practical implications for business practitioners and research directions for academicians, emphasizing upon the need to investigate the comprehensive impact of employee wellbeing in organization and the society as a whole.

Keywords: mindfulness, meaningfulness, employee wellbeing, empathetic concern, organizational politics, moderated mediation analysis

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***Correspondence:**
Shreshtha Yadav
shreshtha@bhu.ac.in
Trayambak Tiwari
trayambak@bhu.ac.in
Anil Kumar Yadav
anilyadav@bhu.ac.in
Neha Dubey
sonamdwivedi1987@gmail.com
Lalit Kumar Mishra
lalit.mishra@igntu.ac.in
Anju L. Singh
anjubhu@gmail.com
Payal Kapoor
hr.payal@gmail.com

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INTRODUCTION

Alike development (physical, psychological), identity, social relationship, work (job) is also a fundamental facet of human life. For an individual, having a job is essential to accomplish his economic freedom as well as to fulfill his physiological, social and psychological needs. Therefore, we all put a significant amount of our strength to find a suitable job and thereby gets involved

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Effect of Suryanamaskar on functioning of Attentional Network among healthy adults

Pratibha Singh, Trayambak Tiwari, Anil Kumar Yadav, Indramani L. Singh, Tara Singh and Anju L. Singh
Banaras Hindu University, Varanasi

Suryanamaskar or Sun salutation is an ancient Indian method of offering prayers to the rising sun in the morning with a series of physical postures with regulated breathing aiming at range of physical, mental and spiritual benefits. The present study examines the effect of Suryanamaskar on attentional network among normal healthy participant. Thirty healthy participants (Age_{range} =20 - 27 years; M_{age} = 24.30 years, SD = 1.76) were taken from the Shiva Yog and Research Welfare Foundation, Varanasi. The participants were given the training of suryanamaskar regularly for 60-days (30 min/day). The attentional network performance measure of the participants was obtained before and after the suryanamaskar training sessions. Results showed that suryanamaskar practice improved attentional network performance of the participants. The finding also suggests the beneficial effect of suryanamaskar on attention network in terms of increase in alerting effect and executive control effect..

Keywords: Suryanamaskar, alerting, orienting, executive control

Suryanamaskar or Sun salutation is an effective yoga technique which incorporates awareness, breath regulation, relaxation and physical activities. Suryanamaskar is an ancient Indian technique of prayer to the rising sun in the morning along with regulated breathing and a series of physical postures. Suryanamaskar is an effective and graceful combination of twelve positions which, relieves stiffness, revitalizes the body, purifies subtle energy channels and refreshes the mind when performed sequentially. Though the impacts of Suryanamaskar have been described in scriptures extensively, but there is a growing need to understand its other cognitive benefits.

The 12 asanas link the physical basis of Suryanamaskar in a dynamically performed series. These asanas are performed in such a way that they alternately stretch the spine backward and forward. A full round of Suryanamaskar consists of 2 sets of all combinations of poses with a change in the second set to moving the opposite leg first through the series (see Appenix-1 for detail). Physical activity of any form followed by supine rest can influence attentional processes. Suryanamaskar has been reported earlier as physical exercise which shows its beneficial effects in improving the executive function (Chavhan, 2013), and influences the attentional span is well documented (Kondam, et. al., 2015). Suryanamaskar is useful in achieving concentration (Dalvi, 2012). It improves significantly both the physical and cognitive functioning areas (Daspute, 2005). The Suryanamaskar practice was found to be effective on the levels of emotional maturity and psychological wellbeing.

In an earlier study, it was speculated that Suryanamaskar can be an ideal aerobic exercise as it involves both static stretching and slow dynamic component of exercise with optimal stress on the cardiorespiratory system. Apart from physical health and physiological rest, an improved attentional process and cognitive function determines the scholastic performance on executive functioning (Chavhan, 2013).

Telles et al. (1993) observed the effect of yogic practices on school children in two groups and found a significant change in attention span and memory in the practice group after a ten days study. In another study, Batra et al. (2003) observed 322 children and found that the

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Does Working Memory Task Load alter Time Perception?

Vishal Yadav, Tarun Mishra, Trayambak Tiwari, Anju L. Singh, Anil Kumar Yadav , I. L. Singh & Tara Singh
Banaras Hindu University, Varanasi

The performance under working memory task load and the prospective judgment of time share a close bond and relationship. The present study tested 42 participants in the prospective temporal paradigm by using reproduction method for time perception. A 2(Working memory load: Low and high) x 3(time duration: Short, medium and long) repeated factorial measure design was utilized to conduct the study. The Analysis of Variance (ANOVA) results showed that increasing the task load during working memory task systematically reduced the subjective estimate of time perception. The estimation of time perception was found better under low working memory in comparison to high working memory task load.

Keywords: Time Perception, Working Memory, Task Durations, Estimation

Working memory is our capability to work with information (Alloway & Copello, 2013). This higher-level skill draws attention to the task, despite of distraction or interference (Cowan, Naveh-Benjamin, Kilb, & Saults, 2006; Engle, Tuholski, Laughlin, & Conway, 1999). Working memory is associated with a number of cognitive activities during the school years, from inferences to verbal understanding to mathematical skills (Cowan & Alloway, 2009). It differs from short-term memory, which generally refers to the storage of information for a short period of time, usually a few seconds (Alloway & Copello, 2013; Alloway, Gather-Cole, & Pickering, 2006; McGrew, 2009). In working memory, information is temporarily held in mind which is useful to complete a wide range of cognitive tasks (Baddeley & Hitch, 1974; Mathy, Chekaf, & Cowan, 2018). It is one of the active processes of the mind.

Probing a different type of cognitive load, a working memory task is used to study whether memory demand of task affects time perception. The working memory task holds information in memory and recalls it when necessary (Smith & Jonides, 1999). Also the memory demand of the secondary task influences judgment of time duration. The perception of time is an internal mechanism or internal clock which allows organism or participants to estimate time duration as subjective measure of temporal exposure.

The time model generally describes "the internal clock", which comprises at least two components: the accumulator and the comparator. Most timing models are firmly rooted in the internal clock. The internal clock model assumes a temporal mechanism that produces perceived temporal values in ordered relation with real time. This time-specific mechanism, or internal clock, is an interval timer, rather than a periodic or oscillatory mechanism. Periodic clocks (such as those responsible for circadian rhythms) will continue to function and be self-sustaining. Instead, the interval should be triggered by a signal. Once started, the system goes to completion, comes to a rest on its own, and must be restarted. According to internal clock models, an increase in attentional demand by the secondary working memory task causes decrement in number of pulses stored in accumulator mechanism which leads to under-estimation of time (Neath & Neath, 2005).

Working memory performance is often assessed with complex working memory span tasks (complex span tasks for short; e.g., reading span or operation span (Conway, Kane, Bunting, Hambrick, Wilhelm, & Engle, 2005; Mathy et al., 2018). Complex overlay tasks alternate memory tasks (requiring a set of elements in the right

Exploring relationship between attention and consciousness using Dual-Task paradigm

Aarushi Agarwal[1] - Ajeet Patel[1] - Tara Singh[1]
Trayambak Tiwari[1] - Anju Lata Singh[2]

[1] Cognitive Science Lab, Department of Psychology, Banaras Hindu University, India

[2] Department of Psychology, Vasant Kanya Mahavidyalaya, India

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aarushi.agarwal06@gmail.com

ABSTRACT

The ongoing debate on distinctiveness of attention and consciousness form decades claims that some form of awareness exist even in absence of attention. To testify this claim dual-task paradigm has been recreated for independent manipulation of top-down attention and awareness. While the subject are engaged in an attentional demanding central letter task, for awareness periphery task consisting gist of the natural scene, animal image and gender were presented for discrimination for less than 100ms. The subject performed in both single-task and dual-task conditions. After an adequate amount of training, stimulus onset asynchrony (SOA) was determined for all subjects individually. After final testing we can conclude that attention and consciousness are distinct phenomena. Subject could discriminate natural scene and animal images both in coloured and greyscale with performance as high as 90% correct judgement, while in gender discrimination the performance was moderately low around 70-80%.

Keywords: attention; consciousness; Dual-task; independent mechanism

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Body Mass Index, Perceived Body Shape and Sex Role Identity Relationship with Depression Symptoms in Young Adults in India

Aarushi Agarwal, Shabana Bano, Tara Singh, Anju Lata Singh*

The study is conducted to examine whether actual body shape, perceived body shape and gender role identity have any influence on depression symptoms amongst young adults in Indian culture. The age group being examined ranged from 20-25 years, as this is a crucial phase in our culture as people seek both professional and interpersonal settlements. The actual body shape was calculated by using BMI index, the perceived body shape was inferred through Body shape questionnaire, sex role identity was also measured through BEM sex role inventory and for depression. Beck depression inventory was used. A positive correlation was obtained between BMI and Body shape i.e. as the BMI increased the scores on body shape also increased which showed lack of satisfaction, though gender role concerns were identical amongst all female in all three categories according to BMI, all rated highly for female traits with means of 5.0, 4.99, and 4.96 respectively. We found a positive correlation between depressive symptoms with increased body image dissatisfaction. These results can be implicated in the high school education system for a better body image formation.

Keywords: Body-Mass Index, Sex role identity, Depression, Body shape, Adolescents

I. INTRODUCTION

The word fitness is rooting in consciousness of Indian masses at a very fast growing pace; this was originally thought to be a very western concept. But it is true when we adopt something not very own to our culture we tend to unintentionally reform it while imbibing, and that is what happened with the definition of fitness which is being confused with thinness and shape. Schilder and Wechsler (1935) define body image as "the tridimensional image everyone has about himself". There is an increased number of gyms, health clubs, yoga centres and other forms of fitness brands in almost all cities in India. Fitness is now revolving around slimming down or muscle up just to avoid body shamming of any sort. The concepts of thinner the better have seemed too diffused with attractiveness for females and leaner with muscular amongst male in India. It is prevalent despite the gender difference with negligence in nutritional status awareness Shah, Shaikh, & Singh, (2012). Often it has been observed the thinning has

* Research Scholar, Banaras Hindu University. Email: aarushi.agarwal06@gmail.com (Corresponding author); Assistant Professor, Banaras Hindu University; Professor, Banaras Hindu University; Assistant Professor, Banaras Hindu University, Varanasi, respectively.

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Attention Network Task (ANT) Performance: Role of Gender

Anamika Singh*, Trayambak Tiwari*, Sujeet Pratap*, Indramani L. Singh*, Tara Singh*, Tarun Mishra*, Anil Kumar Yadav*, Shreshtha Yadav*, Anju L. Singh**

Abstract

Selective attention offers preferential processing of specific information during cognitive functioning. Gender differences associated with attentional processes exist, yet relatively little explored. The current study assessed the efficiency of attentional networks – alerting, orienting, executive control and the associated gender differences among healthy participants using attention network task (ANT). The participants (N = 41; 20 males and 21 females; Mean age= 27.25 years; Age range=18-30 years) were recruited from the Banaras Hindu University. Results revealed significant gender effect on overall mean reaction time performance (RT) (t=2.35, p < .01). Furthermore, significant gender effect was also found on overall correct detection (accuracy) measure where males perform better in comparison to females (t =1.79 p < .04). In Sum, the findings reveal that significant role of gender was found for reaction time and accuracy performance measures on overall basis, however no effect of gender was found across attention networks task measures i.e., alerting, orienting and executive control. The findings of the present work substantially contribute to discover the gender-based differences in attentional performances.

Keywords: *selective attention, attentional network task, accuracy and reaction time.*

Introduction

Gender differences do exist in pain perception, anger proneness, aggression, and sexual motivation, anxiety, sadness, disgust, and discrimination, chemosensory attention, happiness, and identification, cerebral lateralization, socio-political attitudes, visual selective attention, and a wide range of other cognitive tasks. (Gang, Hu, Jin and Kai, 2013). The attention network test (ANT) including emotional cuing in trait anxiety was created by Fan, Mc Candliss, Sommer, Raz, and Posner (2002) to explore the elements of visual attention. The ANT has been beneficial in decomposing the attentional system into three separate attentional networks - alerting, orienting, and executive networks (Posner & Petersen, 1990). This simple task combines two others widely

*Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi
**Department of Psychology, Vasanta Kanya Mahavidyalaya, College admitted to the privileges of Banaras Hindu University, Kamachha, Varanasi

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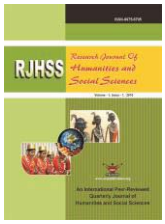

RESEARCH ARTICLE

Temporal Interval as a Function of Prospective Judgment of time Perception

Vishal Yadav[1], Tarun Mishra[2*], Trayambak Tiwari[3], Tara Singh[4], Indramani L. Singh[5], Anju Lata Singh[6]

[1]Research Scholar, Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi, India.
[2]Post-Doctoral Fellow, Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi, India
[3]Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi, India.
[4]HOD and Professor, Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi, India.
[5]Professor, Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi, India.
[6]Assistant Professor, Department of Psychology, Vasanta Kanya Mahavidhyalaya, Banaras Hindu University, Varanasi, India.
*Corresponding Author Email: **Vishalbhu1992@gmail.com, trayambakbhu@gmail.com**

ABSTRACT:

The present study was intended to explore the effect of time durations on time perception using prospective judgment of time paradigm. The dual task paradigm was used for the study. The primary task was intended to estimate elapsed time while performing the executive task and secondary task was design to measure executive performance. A reproduction method was used to estimate the time judgment of the participants. Thirty five students from Banaras Hindu University were taken as participants with age ranged from of 20 to 26 years (21.51 years, SD=1.50). Ratio and Absolute error was derived from observed reproduction of time and considered as dependent measure. The findings reveled that Accuracy of time estimation is better under short time duration in comparison to medium and long time duration. Further, it was also found that participants underestimated the period of time-on- task more under longer duration condition in comparison to medium and short time duration of executive task.

KEYWORDS: Time Perception, Prospective Judgment, Reproduction, Duration, Executive Task.

INTRODUCTION:

Time Perception is attributed to subjective experience of time which is measured by the persons own perception of the duration of the events. The concept of "time perception" has been introduced by Fraisse in 1984. According to him time perception can be understand by two underlying concept a) Succession and b) Duration. When two or more event are recognized as different and organized sequentially is known as succession. Duration is defined as temporal difference between two successive events. It can be noted that there is no duration without

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Exploring the Relationship of Attention and Consciousness: A review

Ajeet Patel[1], Aarushi Agarwal[1], Trayambak Tiwari[1], Anju L Singh[2], Tara Singh[1], Indramani L. Singh[1]&Tarun Mishra[1]

Abstract

Attention may be understood as the process of selectively concentrating on one aspect of environment while ignoring others at the same time. Whereas, consciousness can be understood as state of arousal in which persons are mentally receptive to signals coming from the surrounding environment. Scholars believe that cognitive processes, attention and consciousness are closely related to each other. But the exact nature of this relationship remains vague. One school of thought claims that the only attended objects are given rise to conscious awareness and that only if the object perceives consciously it can be attended. Several recent studies provided experimental support for cognitive processing in near absence of attention. An alternative school of thought claims that the processing of attention and consciousness are distinct with differentiated functions and neural mechanism in the brain. The evidences are coming from different experimental paradigm like inattentional blindness, change blindness, attentional blink and dual task paradigm for better understanding about the exact relationship between attention and consciousness. Well, at last, the arguments between attention and consciousness still not clear, and more sophisticated and sound methodology are needed to establish clear and vivid relation of both, attention and consciousness.

Key words: Attention, Consciousness, Dual-task paradigm

[1]Cognitive Science Laboratory, Department of Psychology, BHU, Varanasi
[2]Department of Psychology, Vasant KanyaMahavidyalaya, Kamachha, Varanasi

Our visual world is abound with distinct stimuli, and our selection process of stimuli mainly depend upon stimulus meaningfulness and relevancy to us from these we select only those stimuli which are meaningful and relevant to us. The cognitive process exactly involved in this selection is known as attention (Dember& Warm, 1979). Whereas, Consciousness can be understood as the state of arousal in which persons or animals are mentally receptive to signals coming from the surrounding environment (Pacherie, 2004).

Attention

William James (1890) suggested that only one system or process can take place in a given moment of time.His definition of attention is well-known and popular, he said "everyone knows that what attention is, It is the taking control by the mind in clear and intense form of one out of several simultaneously possible objects. Focalizations and

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Effects of Continuous and Intermittent Attention on Time Perception

Vishal Yadav*, Tarun Mishra*, Trayambak Tiwari*, Indramani L. Singh* &Tara Singh* & Anju Lata Singh**

Abstract

Attention model suggests that observer are more attentive during non-temporal information processing as compared to when people are paying attention to the processing of only temporal information, which may result in impaired time perception (Zakay & Block, 1995). Present study aims to investigate the effect of continuous and non-continuous attention on time perception task. Ninety participants (45 male and 45 female) ranging from 18 to 26 years with mean age of 21.47 years, SD=1.53 of the Banaras Hindu University took part in the study. Total 80 pictures were used in the study. The pictures were drawn randomly from International Affective Picture System (IAPS) which is categorized on three levels valance, dominance and arousal. All participants were categorized in to two groups. One group was exposed to continuous picture while the other group were shown non-continuous picture with an interval of 3000 milliseconds. The total time allotted for picture exposure was kept constant for both conditions i.e. 120 Seconds. In continuous condition total 60 pictures were shown with 2000 millisecond exposure to each image whereas in non-continuous condition only 20 pictures were shown with duration of 2000 milliseconds with an interval of 3000 milliseconds between two pictures. Prospective paradigm was used for time perception. Time perception was measured by using verbal method. Slideshow of pictures was designed on SuperLab® (Cedrus, 2012, Version 4.5) Software. In accordance with attentional model, independent t-test results shows that high underestimation of time perception was found under non-continuous condition in comparison to continuous condition.

Keywords: Time Perception, Verbal method, Attention, Attention Processing.

*Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi
VasantaKanyaMahavidhyalaya, Varanasi;** Email: Vishalbhu1992@gmail.com

Introduction

People's time perception has been predisposed to deviate from its objective time depending on what they were executing during that particular period of time (Buhusi&Meck, 2009). Time is a very important dimension of individuals observed world (Buhusi&Meck, 2005).Time perception is attributed to be the subjective experience of the time which is analyzed by someone's own perception of the duration of the events. Perceived duration is referred as the time perceived lapsed from the beginning of an event

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Does acute aerobic exercise augments perceptual sensitivity during vigilance task performance?

Naveen
Thapar Institute of Engineering & Technology Punjab

Tarun Mishra, Trayambak Tiwari, I. L. Singh, Tara Singh
Banaras Hindu University Varanasi

Anju L. Singh
Vasant Kanya Mahavidyalaya Varanasi

The relationship between arousal and attention has become matter of concern in the field of cognitive science. Physical exercise has been recognized as one of the best method to experimentally influence the arousal state among individuals in cognitive studies. The present study was an effort to examine the effects of different arousal levels induced through exercise on vigilance task performance. A 2 (Event Rate: Low and High) ×3 (Exercise protocol: No exercise, mild and intense exercise) ×4 (Time Period: Four 10 minutes block) mixed factorial design with repeated measure on last factor was employed. Ninety healthy male students within age range from 19 to 25 years were assigned into six different experimental conditions and were assessed on forty minutes vigilance task. Perceptual sensitivity scores were computed as recommended from signal detection theory. Repeated measure analysis of variance (ANOVA) revealed least decrement in perceptual sensitivity across time periods under low event rate condition ($p = 0.04$). In addition, mild exercise protocols also reported least decrement across time periods than no exercise and intense exercise, ($p = 0.05$). These findings suggested that optimum level of arousal facilitates vigilance task performance across time periods.

Keywords: Arousal, Event-rate, Exercise, Vigilance, Perceptual Sensitivity

Physical exercise has been linked to better physical fitness, brain functioning and cognitive performance (Chaddock, Pontifex, Hillman, & Kramer, 2011; Sibley & Etiner, 2003). It can be categorized into two general metabolic pathways that support the energy to the muscle (i.e. aerobic and anaerobic). Aerobic exercise comprises those activities which require more oxygen than sedentary behavior, whereas anaerobic exercise is short in duration and requires a breakdown of energy sources in the absence of sufficient oxygen. Physical exercise has both chronic and acute effects on cognitive/ brain functioning, the chronic effects of exercise is concerned with the repetition of exercise bouts over time lasting from weeks to years, whereas acute effects refers to its immediate effects on cognitive functioning as soon after an individual stop exercising.

Acute exercise has been hypothesized to alter brain function which affects the mental resources dedicated to cognitive performance (Audiffren, 2009). Researches have well established that maintaining physically activity protects brain from inevitable decay (Erikson & Kramer, 2009; Erickson et. al., 2011). Physical exercise seems to improve cognitive performance on some cognitive tasks under certain circumstances, it also appears to inhibit cognitive performance on other tasks or on the same tasks under diverse conditions. Moreover, the effect of physical exercise on cognitive performance is a broad research area, including multiple domains of human cognitive performance (Churchill, Galvez, Colcombe, Swain, Kramer, & Greenough, 2002; Coteman & Berchtold, 2002; Erikson & Kramer, 2009; Erickson et. al., 2011).

Several researches on the relation between physical exercise and cognitive performance have tested predictions drawn from “arousal” theories (e.g., Hockey, Gaillard,

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A REVIEW ON DISSOCIATIVE PERSPECTIVE OF ATTENTION AND CONSCIOUSNESS

Aarushi Agarwal[1*], Ajeet Patel[2], Tara Singh[3], Trayambak Tiwari[4], Anju Lata Singh[5]
[1,2,3,4]Cognitive Science Lab, Department of Psychology, Banaras Hindu University, India, [5]Department of Psychology, Vasant Kanya Mahavidyalaya, India.
Email: [*]aarushi.agarwal06@gmail.com

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Abstract

Purpose of the study: To answer the two existing controversies regarding attention and consciousness as brain processes. 1) Can one be aware of objects or events without attending to it? 2) Can one attend to objects or events without being aware of it? And also how top-down attention and awareness have opposing functions.

Methodology: This article is a systematic review of the relationship between visual attention and awareness. An extensive elaborate study on concepts relating to attention and consciousness dissociation has been done. In this article we also narrow it down to experimental design that requires independent manipulation of each. Which include top-down attention and awareness aspect of consciousness?

Main Findings: Many researches have been put forward supporting the independent nature of attention from awareness using sophisticated experimental and physiological shreds of evidence. On the other hand, some researches still stick to the contemporary common-sense notion of no awareness no attention. Our evaluation suggests an independent nature of attention and awareness.

Application: This article intends to give a clear perspective of the ongoing debate on the relationship between attention and consciousness. Simplification of both umbrella terms will give basis for building more empirical evidence.

Novelty: Further, this article put forward studies on both sides of debate aiming to bridge the gap to get a conclusive outlook in the future.

Keywords: *awareness, attention, dissociation, top-down attention, cognitive debate.*

INTRODUCTION

Our cognition comprises various phenomena carrying out unique functions, but it's difficult to functionally separate them at both behavioral and neural levels beholding intricate neural bonding. Rather this intricacy makes the work of researcher more challenging and crucial. Mole (2008) suggested that this growing dissatisfaction amongst scientists upon the relationship shared between attention and consciousness is becoming haunting. Most philosophical early works on attention in itself implied to be a study of consciousness (James, 1890). Posner (1994) felt a need to drift from philosophy to experimentation, and the findings have always surprised us with not so ideal common sense view held earlier.

This essay intends to bridge the gap between contemporary and modern work in the area focusing more on the evolution of the definition of attention and consciousness based on the debate. Suppose you are in a hurry and you need to find keys on your desk, it obvious that "keys" occupy your focus among rest of the stuff on the desk and thus at the same time your awareness too, but let say during your search simultaneous question about other things on the table like, "Was there a pen on the table?" Or "what color was the pen?" etc. is put up to you, you will be able to answer some of them without even having a focused gaze at the pen. This might turntable for you on an existing definition that points on the necessity of awareness for attention and vice versa. To understand this example better first one should perceive that awareness, in general, is the entire plethora of stimulus in your visual field while attention is focused on specific things based on your needs, interest, etc. Theory and reality thus stand apart, based on simple introspection as sole measure of consciousness and other contemporary resources some scholars suggest a tight and dependent relation between attention and awareness (Brigard & Prinz, 2010; Cohen, Alvarez, & Nakayama, 2011; Cohen, Cavanagh, Chun, & Nakayama, 2012; De Brigard, 2010; Mack, 2003; Merikle & Joordens, 1997; Mole, 2008; Posner, 2008; Regan &Noë, 2001). In mid of the contemporary techniques used to satisfy the common-sense notion of the relationship, Braun & Julesz, (1998) came up with a dual-task paradigm that objectively helped to manipulate attention and awareness independently in an experimental scenario. Even another paradigm like priming paradigm, voluntary involuntary attention experiment help to establish a more scientific ground. These recent studies using sophisticated physiological evidences in support of behavioural evidences have cumulated a different proposal stating an independent nature underlying different neuronal processes (B J Baars, 1999; Bernard J Baars, 1997; Boxtel, Tsuchiya, & Koch, 2010; Bussche, Brussel, & Brussel, 2012; Dehaene & Naccache, 2001; Fei-fei, Koch, & Perona, 2005; Kentridge, Heywood, &Weiskrantz, 1999; Lamme, 2003; Tsuchiya & Koch, 2009; Vanrullen, Reddy, & Koch, 1973).

Since long "no consciousness no attention" and vice-versa has been considered as a common-sense notion (Mole, 2008). But as our research horizon is growing we need to rethink it. Consciousness is not merely automated and blinded respond to environmental stimulus rather it has a unique way of processing. (Marchetti, 2018) Explained consciousness produces information rather than just transmitting and even information produced are meaningful which is individuated. Whereas

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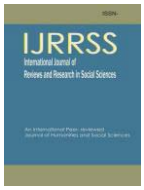

RESEARCH ARTICLE

Effect of Time Duration on Prospective Judgment of time Perception

Vishal Yadav[1*], Naveen[1], Trayambak Tiwari[1], Tara Singh[1], Indramani L. Singh[1], A. L. Singh[2]
[1]Cognitive Science Laboratory, Department of Psychology, Banaras Hindu University, Varanasi, India.
[2]Department of Psychology, Vasanta Kanya Mahavidhyalaya, Banaras Hindu University, Varanasi, India.
*Corresponding Author E-mail: **vy09486@gmail.com**

ABSTRACT:
Time is a crucial dimension of our perceived world. Time estimation is animportant ability that individuals need to master in order to adapt their environment. The present study was conducted to investigate the effect of different time duration during working memory task using prospective judgment of time perception. Reproduction method was used to estimate the prospective judgment of time. Fifty undergraduate and post-graduate students of the Banaras Hindu University within age range 20-25 years were participated in the study. Results revealed that participants estimated time more accurately under short duration than medium and longer durations and time estimation was highly underestimated in longer duration than medium and short duration.

KEYWORDS: Working memory, Time perception, Estimation, Reproduction, Prospective paradigm.

INTRODUCTION:
Time perception refers to subjective experience of time which is measured by individual's own perception about the duration of the events. People's time perception has been predisposed to diverge from objective time depending on what they were busy with during a particular period of time (Buhusi and Meck, 2009). Time seemingly passes faster when people have a good time, whereas time seemingly drags when they are bored. The concept of "time perception" has been introduced by Fraisse in 1984. Perceived time is not as the actual or chronological time. It implies the subjectivity of time depending on human perception.

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The role of psychological time in human life is so important that it has been intensely investigated by researchers. It has been tried to explain how people perceive time differently from objective timing (Block, 1990). Many studies on time perception focus on duration which is the representation of present and recent past events. Although humans have no sensory organ for timing, it is asserted that cognitive and biological processes explain time perception of human beings. The reason is that attention and memory related cognitive processes are essential to estimate a given duration (Block and Zakay, 1996).

Experiments of time estimation used two dominant paradigms: prospective and retrospective paradigm. In prospective paradigm, person knows in advances that a duration judgment is required, whereas in retrospective paradigm, person does not have this prior knowledge.

Attentional gate model (Block and Zakay, 1996) is a leading model of prospective time judgment. This modal assumes that a mental pacemaker regularly generates pulses to measure time. If a person directs attention to the course of time, a gate opens and are accumulated in a

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Effects of Task Load and Cue Validity on Simultaneous Sustained Attention Search Task Performance

Tarun Mishra, Naveen, T. Tiwari, Indramani L. Singh, Rakesh Pandey and Tara Singh
Banaras Hindu University, Varanasi
&
A. L. Singh
Vasant Kanya Mahavidyalaya, Varanasi

The present study aimed to examine the effect of task load on visual search sustained attention task performance. Cue works as a signal and may facilitate or deteriorate the performance. These effects depend on cue validity and its temporal properties. Present study used cue validity to observe the effect of cue on participant's performance. Ninety participants were randomly assigned into different experimental conditions. A 2 (Task load: High and Low event rate) X3 (Cue validity: Valid, Invalid and Neutral) X4 (time block: 10 minutes each) mixed factorial design with repeated measure on the last two factors was used. Correct detection, incorrect detection and reaction time were recorded as performance measures to analyze sustained attention task performance. Results revealed that correct detection and perceptual sensitivity was higher under low task load condition in comparison to high task load condition. Moreover, response latency was found better under low task load condition than high task load. Ample evidences have proven that attentional tasks are resource demanding, when the temporal load of task increases it works as a catalyst to diminish our ability to perform on task. The present study holds promises to counter such decrement with the help of cue.

Keywords: Attention, Cue, Cue Validity, Temporal Load, Response Latency.

The speed at which advancement in technology is progressing, role of humans has shifted from active participants to a passive observer who must remain alert to detect critical signal or changes in the system status. Attending to them well, we need to focus on a desired stimulus while cancelling others. This ability to concentrate and focus is a core feature of human cognition (MacLean, Aichele, Bridewell, Mangun, Wojciulik & Saron, 2009). Such ability to concentrate attention for a longer period of time is known as sustained attention. Sir Henry Head (1923) used the term vigilance and described it as a physiological state of readiness of the nervous system to react in a certain way. Sustained attention or vigilance refers to "a state of readiness to detect and respond to certain small variance occurring at random time interval in the environment" (Parasuraman & Davis, 1984). Numerous researches stated that, the alertness is an effortful and resource demanding process that cannot be maintained for a prolonged time periods (Desmond, Matthews & Bush, 2001). Posner and Boies (1971) explained sustained attention with two primary characteristics; first was the alertness of observer towards stimuli and second one was the ability to focus on one source of information over other. The most widely accepted criteria for sustained attention were propounded by the McGrath (1963) and Warm (1977, 1984). They discussed four core attributes of sustained attention task which make them unique and establish a criterion to distinguish it from other attentional tasks. The criteria were (i) the task should be of long duration (ii) the signals must be clearly perceivable when the participants are alert to detect (iii) signals must occur randomly, infrequently (iv) occurrence of signals must have no impact on observer's response. The vigilance task must constitute all these four criteria.

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Mental health in relation to emotional intelligence among university students

Vishal Yadav, Naveen, and Trayambak Tiwari
Department of Psychology
Banaras Hindu University, Varanasi, Uttar Pradesh

Anju L. Singh
Department of Psychology
Vasanta Kanya Mahavidhyalaya, Varanasi, Uttar Pradesh

Emotional intelligence has often been found as a significant marker of mental health. In this pursuit, the present study examined the relationship between emotional intelligence and mental health among university students. A sample of 80 participants was taken out of which 40 were male and 40 female students with in the age range of 16-20 years from Banaras Hindu University. Emotional Intelligence and Mental Health of the participants were assessed, Pearson r yielded positive correlation between mental health and emotional intelligence, ($r = 0.31$, $p < 0.01$).

Keywords: emotional intelligence, mental health, adolescents

Mental health is a crucial psychological factor with respect to human behavior. Available research has demonstrates that mental health offers an attribute of human resource development. Empirical research findings indicated that mental health improvement leads to a better utilization of resource while its impairment has led to serious negative and life threatening consequence. Characteristics of mentally healthy people are listed below.

- *Emotionally mature:* These type of people control and express their emotions according to the accepted social norms.
- *Self-confidence and optimism:* Such type of people were self-confident and optimist about their qualities. They maintain balance in all things and show enough capacity to tackle difficult and demanding situations.
- *Realistic assessment of self and self-acceptance:* These people are very well aware of their capabilities, behaviors and skills. His approach to the various problems of life is realistic. He is not cowed down by imaginary fears or pitfall which may come
- *Integrated and adjusted personality:* Mentally healthy individuals always maintain balance in their personality. For these people the self-image is very powerful and they always keep on adjusting and reframing the hard believes in difficult situations.

Emotional intelligence is defined as the ability for recognizing our own feelings and those of other, for motivating ourselves and for managing emotions well in ourselves and in our relationships. It is a dynamic construct influenced by diverse biological, psychological, and social factors. A good deal of research has been conducted on emotional intelligence and it was found to be an important factor in the prediction of personal, academic and career success. Studies on emotional intelligence with respect to various psychosocial correlates have been found in a variety of fields.

Empirical studies investigating the relationship of emotional Intelligence with numerous psychological and psychosocial factors reveal the significance of emotional intelligence and its beneficial aspects. The study of relationship between emotional intelligence and mental health contributed in the field of interpersonal relationships, success in work and personal life, health psychology, managing occupational stress, academic field, improving personality, enhancing performance and many more positive behavior patterns.

Salovey and Mayer (1990) have shown that the emotional intelligence developed with increasing age and experience. Modern life is becoming highly complex because of the process of urbanization and related social changes which influence the lives of people. Goleman (1995) found that the signs of emotional intelligence appear among very young children. Goleman (1996) have also stated that emotional intelligence increases with age and it can be learned, cultivated and increased in adulthood.

Thingujam and Ram (2000) in their attempt of Indian adaptation of emotional Intelligence Scale found that women were significantly scoring higher than men. Cartwright (2002) found that people who scored higher in emotional intelligence scale suffered less subjective stress, experienced better health and well-being, and demonstrated better management performance. Recently, Shabani (2010) explored the relationship of emotional Intelligence with Mental health and its sub scales (somatic symptoms, Anxiety social dysfunction & depression) in Iranian high schools students. This study revealed that mental health scales and its sub scales scores influences by emotional intelligence.

Several studies have reported that positive relationship between mental health and emotional intelligence. However limited studies have focused on association among these variable on Indian subjects. There are mixed findings related to gender differences in mental health and emotional intelligence of university students.

Objectives of the study

- To assess the relationship between mental health and emotional intelligence among university students.
- To compare the scores of male and female on mental health and emotional intelligence.

Hypotheses of the study

- Mental health and emotional intelligence would be positively correlated.
- There would be significant gender differences among university

Correspondence should be sent to Dr. Trayambak Tiwari
Assistant Professor, Cognitive Science Laboratory
Department of Psychology, Banaras Hindu University
Varanasi, Uttar Pradesh
E-mail: trayambakbhu@gmail.com

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Effect of Single Bout of Aerobic Exercise on Vigilance Task Performance

Naveen*; Tarun Mishra**; Trayambak Tiwari***;
I. L. Singh****; Tara Singh*****; A. L. Singh******

*Cognitive Science Laboratory,
Department of Psychology,
Banaras Hindu University,
Varanasi, India.

**Cognitive Science Laboratory,
Department of Psychology,
Banaras Hindu University,
Varanasi, India.
tarunera@gmail.com

***Cognitive Science Laboratory,
Department of Psychology,
Banaras Hindu University,
Varanasi, India.

****Cognitive Science Laboratory,
Department of Psychology,
Banaras Hindu University,
Varanasi, India.

*****Cognitive Science Laboratory,
Department of Psychology,
Banaras Hindu University,
Varanasi, India.

******Department of Psychology,
Vasant Kanya Mahavidyalaya,
Banaras Hindu University,
Varanasi, India.

Abstract

There has been accumulative interest in how, and to what level, physical activity might affect cognitive performance in general (Mastroianni, Chuba, & Zupan, 2003). The present study examined the effect of single bout of aerobic exercise on vigilance task performance. A 3 (Exercise Protocols: No exercise, mild exercise, moderate exercise) ×4 (Time Periods: Four 10 min block) mixed factorial design with repeated measure on last factor was used. Forty two young adults within age range of 19 to 24 were randomly assigned into three different experimental groups. One groups of participants exercised under moderate protocols, second group of participants exercise under mild exercise protocol while the third group rested for 10 minutes. Following these interventions all participants observed 40 minutes visual vigilance task. Repeated measure analysis of variance (ANOVA) revealed that, performance of moderate exercise group on reaction time measure more inhibited than mild exercise and no exercise groups ($p = 0.001$) . However correct detection and incorrect detection performance among different experimental groups remained intact. Participant's perceptual sensitivity among groups differed across time periods ($p = 0.03$). The findings has been discussed in terms of Mackworth's (1968) habituation theory.

Keywords: Cognitive Performance, Exercise, Vigilance, Reaction Time, Perceptual Sensitivity.

Introduction

People often describe changes in their ability to execute any cognitive task during and following physical exercise. Enormous number of studies has been conducted to see the effects of physical activity on cognitive performances in last five decades. There has been accumulative interest in how, and to what level, physical activity might affect cognitive performance in general (Mastroianni, Chuba, & Zupan, 2003). Physical activity is defined as any physical movement produced by skeletal muscles that result in energy expenditure (Caspersen, Powell, & Christenson, 1985). Physical exercise furthered can be divided broadly into two parts, aerobic exercise and anaerobic exercise. Aerobic exercise includes activities which requires more oxygen than sedentary behavior (i.e., running, playing basketball, football etc.). Anaerobic exercise is short in duration and requires a breakdown of energy sources in the absence of sufficient oxygen. Anaerobic activity (e.g., swimming or biking) requires maximal performance during the brief period.

Exercise researcher have assessed cognitive function during and following exercise. Single exercise bouts are often used to study the effect of physical exercise on cognitive function in sports and human factors. Extended bout of physical exercise are designed with the prior expectation that exercise will induce some physical fatigue state in individuals. Physical fatigue can be defined as any exercise induced reduction in the ability to generate muscle force or power (Gandevia, 2001). It is a complex phenomenon affected by both central and peripheral nervous system factors (Meeusen, Watson, Hasegawa, Roelands, & Piacentini, 2007; Moore, Romine, O'connor, & Tomporwski, 2012). Studies involving twitch interpolation and transcranial magnetic stimulation has well established that physical exercise also induces fatigue in the brain neurons involved in central motor drive (Amann & Dempsey, 2008; Gandevia, 2001).

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Effect of Aerobic Exercise on Reaction Time During Vigilance Task Performance

Naveen, Tarun Mishra, Trayambak Tiwari, Indramani Lal Singh, Anju L. Singh & Tara Singh
Banaras Hindu University, Varanasi

Physical exercise has been linked to mental health benefits. However, little is known about how physical exercise affects cognitive functioning. Results obtained from laboratory studies on the effect of physical exercise on cognitive performance has been inconsistent. The present study examined the effect of different level of aerobic exercise on visual vigilance task performance. Thirty three male participants in the age range of 19 to 24 years participated in this study. A 3 (Exercise Protocols: No exercise, 7 minutes, 14 minutes) ×4 (Time Periods: Four 10 minutes block) mixed factorial design with repeated measure on the last factor was used. The analysis of variance results revealed a significant difference between vigilance task performance of the groups ($p = 0.001$). The performance of the group with 14 minutes exercise protocol was more inhibited than the performance of the groups with 7 minutes and no exercise. The findings have been discussed in terms of resource depletion theory of Kahneman (1973).

Keywords: Aerobic exercise, Cognitive performance, Vigilance, Reaction time.

Individuals often experience changes in their ability to perform mental tasks after physical exercise. The effects of physical activity on individual's ability to perform a cognitive task has been the interest of researchers in the areas of human factors and sports performance (Royal et. al. 2009; Perry, Sheik-Nainar, Segall, & Kaber, 2008; Moore, Romine, O'Conner & Tomporwski, 2012). Physical activity is defined as any physical movement produced by skeletal muscles that result in energy expenditure (Caspersen, Powell, & Christenson, 1985). It can be divided into two parts: aerobic and anaerobic. Aerobic exercise includes activities which require more oxygen (i.e., jumping rope, running etc.). Anaerobic exercise is short in duration and requires a breakdown of energy sources in the absence of adequate oxygen (i.e., swimming, riding a bicycle).

Researchers have measured the effect of physical exercise on cognitive function during and following physical exercise. Recent studies (i.e., Moore et. al., 2012) measuring cognitive performance following physical exercise are based on a prior expectation that physical exercise will produce arousal or physical state of fatigue in participants. Physical fatigue can be defined as any exercise-induced reduction in the ability to generate muscle force or power (Gandevia, 2001). It is a complex phenomenon affected by both central and peripheral nervous system factors (Meeusen, Watson, Hasegawa, Roelands, & Piacentini, 2007; Moore et. al., 2012). Exercise bouts are often used to study the effect of physical fatigue on human performance and cognition. It has been well established through experiments involving twitch interpolation and transcranial magnetic stimulation that exercise also induces fatigue in the brain neurons involved in central motor drive (Amann & Dempsey, 2008; Gandevia, 2001; Moore et. al., 2012).

Studies conducted on immediate short-term effect of physical exercise on cognitive performance indicated that short period of physical exercise improve cognitive function (Hogervorst, Riedel, Jeukendrup, & Jolles, 1996) while some other studies found no such effect (Cote, Salmela & Papthanasopoloulu, 1992) or even reported deterioration (McMorris & Keen, 1994). Narrative and meta-analytic reviews on the effect of physical exercise on cognitive performance have also reported some contradictory results (Tomporwski, 2003;