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Our Team: Edition I, Volume II

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A Note by the Editor-in-Chief

Research is often evaluated by what it confirms, but its significance is just as frequently found in what it complicates or reframes. The papers in this edition of the *Ashoka Psychology Review* engage with questions that resist simple resolution, instead demanding attention to process, context, and interaction across levels of analysis.

Several contributions in this edition examine psychological phenomena across levels of analysis. A review of resting-state network dysconnectivity in schizophrenia synthesises neuroscientific work on auditory verbal hallucinations beyond stimulus-driven models, while a critical analysis of multisensory regulation of feeding in Drosophila melanogaster considers how converging sensory inputs shape behaviour and the methodological limits of current approaches. Other papers situate psychology within social and cultural contexts, examining aesthetic judgment as an interaction between biology and learned preference, workplace bullying in India and Australia through the lens of power distance, and human trafficking with attention to psychological impact, structural vulnerability, and prevention.

Across these diverse domains, a shared concern emerges: psychological phenomena are rarely reducible to single causes or isolated levels of explanation. Instead, they unfold through interactions—between neural networks, sensory systems, social norms, and institutional arrangements. This edition reflects an engagement with that complexity, without assuming that complexity must always yield neat conclusions.

I would like to thank the authors for their careful scholarship, and the editors and for the rigour and seriousness they brought to this process. I hope this issue encourages readers to engage with research not only as a source of answers, but as a means of refining the questions we ask, and the frameworks through which we ask them.

Srishti Upendra
Editor-in-Chief
Ashoka Psychology Review: Edition I, Volume II

Contents

ACADEMIC PAPERS:

Exploring Dysconnectivity in Multiple Resting State Networks of Schizophrenic Individuals Experiencing Auditory Verbal Hallucinations

Author: Reva Sawant

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Abstract

Ever since its discovery in the early 1900s, schizophrenia has been an integral domain of exploration in the field of neuroscience. Within it, auditory verbal hallucination (AVH) is a highly prominent and debilitating symptom that has been targeted in various fMRI studies till date. Since many AVH studies in the past involved an external stimulus, it was necessary to examine their occurrence when the brain is at rest. This is because resting states would separate the stimulus from the hallucination and actually observe abnormal neural activity in the absence of any initiating force. Therefore, this paper synthesised existing literature on AVHs with respect to four distinct resting state networks (RSNs), such as the default mode network, central executive network, salience network and sensorimotor network. Each RSN's important brain regions were highlighted, followed by deeper insights into AVH-based research done specifically on them. Most studies observed their functioning by conducting fMRI scans and relying on BOLD signals to highlight increased or decreased connectivity within an RSN or between regions of multiple RSNs. To understand how these neural changes are manifested into the symptoms of schizophrenia, implications about procured inferences for all RSNs were suggested by researching specific functions of highlighted brain regions and hypothesising the impact of hyperconnectivity or hypoconnectivity on their functioning.

Keywords: schizophrenia, auditory verbal hallucinations, resting state network, default mode network, central executive network, salience network, sensorimotor network.

Beauty Lies in the Eye of the Beholder: The Cognitive, Social and Biological Dimensions of Aesthetic Judgment

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Abstract

You judge beauty every day, whether you realise it or not. From faces on a screen to art in a gallery, your brain and your culture work together to tell you what looks "good" in ways that other things don't. Some argue that beauty is only subjective. Others point to universal preferences like symmetry and proportion. Psychology shows that the truth lies in both these directions. Cognitive psychology explains how your brain processes symmetry, averages, and fluency to form fast judgments of attractiveness. Social psychology explains how your culture and the media shape what you learn to prefer. This paper reviews theories and evidence from evolutionary psychology, cognitive science, and cultural studies to show how beauty is constructed. It argues that beauty judgments are neither random nor fixed, but dynamic outcomes of biology interacting with society. You'll see how biases like the halo effect, cultural ideals of body size, and globalised media shape what you call beautiful. By the end, you'll understand that beauty is not just in the eye of the beholder but in the systems that train that eye to see.

Keywords: beauty, perception, aesthetic judgment, social psychology, cultural influence

Breaking the Chains: Reintegration, Trafficker Mindsets, and Prevention

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Abstract

Human trafficking, a global crisis, involves the exploitation of individuals through force, fraud, or coercion. This paper explores the multifaceted nature of human trafficking, delving into the psychological impact on victims, the motivations of traffickers, and the societal implications. This paper examines the factors contributing to vulnerability, the role of organised crime, and the legal and ethical challenges involved. The central research question studied is: to what extent do the socio-economic factors, cultural norms, and governance structures of specific regions influence the prevalence and nature of human trafficking, and what are the implications for targeted prevention and intervention strategies? Socio-economic disparities, cultural norms, and governance structures significantly influence the prevalence and nature of human trafficking. To effectively combat this issue, comprehensive strategies are needed to address root causes, protect vulnerable populations, and provide comprehensive support services to survivors. The paper discusses strategies for prevention, intervention, and victim support, emphasising the importance of international cooperation and multidisciplinary approaches. By understanding the complexities of human trafficking, we can work towards developing effective solutions to combat this heinous crime.

Keywords: human trafficking, reintegration, exploitation, commercial sexual exploitation, trauma-informed care, organized crime, distress migration, bonded labor, conviction rate.

Critical Analysis of Multisensory Interactions Regulate Feeding Behavior in Drosophila

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Abstract

In the paper by Oh et al. (2021), the multi-sensory integration of information is explored in Drosophila melanogaster. This includes inputs from the gustatory, olfactory, and mechanosensory cues to guide feeding decisions. The study employs a combination of proboscis extension reflex (PER) assays, targeted neurogenic tools, manipulations of loss and gain of function and adorn profiling to find its results. These results highlight that yeast door, sucrose taste and mechanosensation all interact together to increase feeding initiation. This enhancement is called a supra-additive effect that can only be achieved from a multi-sensory convergence as it is not observed when solely driven by isolated sensory channels. This review highlights the conceptual contributions to this field and the methodological strengths of the study while also evaluating its limitations in ecological validity, lack of outline for the convergence in the central nervous system and also its over-reliance on PER as a behavioural proxy. The review presents alternative assays and future directions to understand in more depth how peripheral sensory signals integrate to affect feeding behaviour. This paper marks a significant shift in sensorimotor neuroscience as it moves towards integrative models.

Keywords: Drosophila melanogaster, feeding behavior, sensory integration, neurogenetics, olfaction, taste perception, mechanosensation, behavioral assays

Harassing Hierarchies: How Power Distance Shapes Social Behaviour in India and Australia

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Abstract

Power Distance (PD) refers to the degree to which less-powerful members of a society accept unequal power distribution. It shapes how workplace aggression is experienced and contested. Building on cross-cultural theory and empirical studies, this paper examines how PD relates to the prevalence and form of workplace bullying in India (PDI $\approx$ 77) versus Australia (PDI $\approx$ 36). A synthesis of existing surveys shows consistently higher rates of frequent negative acts in high-PD contexts and a distinctive pattern of vertical, superior-to-subordinate bullying in India compared with more mixed (vertical and horizontal, peer-to-peer) sources of mistreatment reported in low-PD Australia. Empirical contrasts, including behavioural criteria rates and large disparities between behavioural exposure and self-labelling as victims, suggest that cultural norms of deference and limited grievance infrastructure both normalise downward aggression and suppress recognition or reporting of harm. The paper posits that power distance norms not only increase the incidence of bullying but also reduce subordinates' capacity to resist it, producing a self-feeding cycle of unchecked workplace aggression in high-PD settings. Practical implications are also discussed, which include the need for culturally sensitive anti-bullying policies, better reporting and redressal mechanisms for victims, as well as managerial training that explicitly addresses the legitimisation of unequal power in workplaces.

Keywords: workplace aggression, bullying, power distance, cross-cultural psychology

LAB REVIEWS:

Understanding Group Mental Health Through Multi-Brain Neuroimaging: A Review

Written By: Tanya Gupta (Editor)

Original Paper: Ray, D., Roy, D., Sindhu, B., Sharan, P., & Banerjee, A. (2017). Neural Substrate of Group Mental Health: Insights from Multi-Brain Reference Frame in Functional Neuroimaging. *Frontiers in Psychology*, *8*, 1627. https://doi.org/10.3389/fpsyg.2017.01627

Developing a Recovery-Focused Therapy for Older People with Bipolar Disorder: A Qualitative Focus Group Study: A Review

Written By: Arushi Ghosh (Editor), Fern (Editor) and Priyanshi Agarwal (Editor)

Original Paper: Tyler, E., Lobban, F., Long, R., & Jones, S. H. (2021). Developing a recovery-focused therapy for older people with bipolar disorder: a qualitative focus group study. *BMJ Open*, *11*(8), Article e049829. https://doi.org/10.1136/bmjopen-2021-049829

Sounds of Melody-Pitch patterns and Prosody of Speech in Autism: A Review

Written By: Chitrangada Tiwari (Editor) and Reva Sawant (Editor)

Original Paper: Sharda, M., Subhadra, T. P., Sahay, S., Nagaraja, C., Singh, L., Mishra, R., Sen, A., Singhal, N., Erickson, D., & Singh, N. C. (2010). Sounds of melody—Pitch patterns of speech in autism. Neuroscience Letters, 478(1), 42–45. https://doi.org/10.1016/j.neulet.2010.04.066

The ATTUNE Project : A Review

Written By: Aryan Tiwari (Editor)

Original Paper: Batool, S. (2024, September). ATTUNE Project: Transforming Adolescent Mental Health Through Creativity and Science. National Institute for Health and Care Research Applied Research Collaboration Oxford and Thames Valley.

https://www.arc-oxtv.nihr.ac.uk/blog/attune-project-art-science-mental-health-youth

Academic Papers

These papers were written by the student body of Ashoka University, Haryana, India. Any work produced reflects the opinions of the author's and not the Review's.

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ASHOKA PSYCHOLOGY REVIEW

Dysconnectivity of multiple resting state networks in patients with schizophrenia who have persistent auditory verbal hallucinations.

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Introduction

Context

Schizophrenia continues to be a relevant domain of research in the contemporary world due to its complex intricacies, which are still being discovered with gradual updates in scientific research. This chronic psychiatric disorder that impacts perception, thought processes and affect was coined by Professor Eugen Bleuler in 1908 to suggest "splitting of the mind". After this, several clinicians proposed its subclassifications, categorised a variety of symptoms, and contributed to its research (Ashok, Baugh, & Yeragani, 2012). Eventually, symptoms were categorised into positive and negative types, which indicate an excess and lack of typical behaviours, respectively. For example, positive symptoms included hallucinations and delusions, whereas social withdrawal and lack of speech were some of the negative symptoms. After introducing this categorisation in the 1970s, it was implied that persons with schizophrenia will display only either of these symptom groups. However, this mutually exclusive approach was later discarded, and the symptoms were labelled as 'dimensions' instead. This shows the nuanced, ever-changing nature of schizophrenic studies, which began taking neuropathology, physiology, genetics, and clinical psychology into consideration (Jablensky, 2010).

Auditory Verbal Hallucinations

Among the plethora of schizophrenic symptoms, auditory verbal hallucinations (AVHs) stand out as one of the most common, with sixty to eighty-three percent of patients experiencing them (Chuanjun, 2019). By inducing a perception of hearing verbal speech in the absence of any external auditory stimuli, these hallucinations cause significant mental distress and negatively impact patients' behaviour. AVHs can be attributed to certain structural changes in the brain, like the decrease of grey matter specifically in the primary auditory cortex and superior temporal gyrus (Chuanjun, 2019). Studies before the 2010s often focused on a localised perspective of schizophrenia, where they suggested that a change in neuronal activity of a particular cortical region is a causing factor. However, recent studies shifted their focus to a more holistic approach, which implies that the impairments in regional connectivity are causing neural dysfunction linked to schizophrenia (Li et al., 2019).

This dysconnectivity is further caused by abnormalities in neuroanatomy and plasticity which can be genetically passed down to the offspring.

Prior research has mainly focused on AVHs in the presence of external task-based stimuli. A study by Mechelli et al. (2007) examined misattribution of speech and neural dysconnectivity in schizophrenia patients with AVH by recording brain activity during a task that required them to differentiate between their own voice and another person's voice. Although this research provided valuable insights into altered connectivity in left superior temporal and anterior cingulate cortices, it did not consider the issue about AVHs at the grassroots level. Because these hallucinations are not attributable to any external stimulus' presence, a deeper exploration into brain activity in the absence of stimuli must be prioritised in this context.

Resting-state Networks

With the development of neuroimaging techniques like positron emission tomography (PET) and functional magnetic resonance imaging (fMRI), making inferences about functional connectivity in schizophrenia was possible (Nejad et al., 2012). One of the important inferences reflects on the role of resting-state networks (RSNs) and their functioning. Since these regions are active when an individual is conscious but not engaging with any external stimuli, aberrant activation in the absence of such stimuli can justify the role of hallucinatory symptoms like AVH in this particular disorder (Dutta et al., 2014). Previous studies exploring links between RSN dysfunction and occurrence of AVHs have highlighted the relevance of the default mode network (DMN) and its connectivity with other RSNs (Alderson-Day et al., 2018). This is because DMN is responsible for abilities like affective control and episodic memory, and changes in its neural links can be the underlying cause for negative symptoms of schizophrenia (Wolf, 2011). Although DMN is a more commonly studied RSN in this context, one must also take other RSNs like central executive network (CEN), salience network (SN) and sensorimotor networks (SMN) into account. Doing so should provide a holistic view of

intrinsic activity in the brain of schizophrenia patients with AVHs.

Aim of the Paper

To offer an understanding of AVHs occurring in a resting state, this paper will highlight the neural impacts on all resting state networks in schizophrenia during auditory verbal hallucinations. Moreover, it will also project how these dysconnections are manifested into overt and behavioural symptoms in an effort to make this complex disorder more comprehensible.

Default Mode Network

A set of neural connections that are inactive in presence of external stimuli but show strong activity at rest, the DMN is an integral RSN that is responsible for internal thought processes such as emotional processing, self-reflection and mind wandering. It was discovered in the 2000s by Raichle et al. (2001) and since then, it has been fundamental to understanding brain circuitry, its functioning, human cognition and disorders. This network intricately connects primary brain regions like the medial prefrontal cortex (mPFC), precuneus, temporoparietal junction (TPJ), medial temporal lobe (MTL), and posterior cingulate cortex (PCC) (Alderson-Day et al., 2016).

Multiple studies have shown the relevance of DMN in the context of schizophrenia, as they have reported strong and weak connectivities in different DMN subnetworks that correlate to positive and negative symptoms (Cao et al., 2025). If narrowed down to the occurrence of AVHs, research has revealed that intensity of hallucinations can be attributed to destabilisation of DMN in both spatial and temporal ways. Therefore, this resting state network is highly relevant while comprehending the formation of AVHs. For instance, a study by Zhao et al. (2018) spotlighted specific channels in the DMN like the anteromedial prefrontal cortex and posterior cingulate cortex, whose dysfunction can be linked to auditory hallucinations. This was done by measuring the effective connectivity (EC), or the impact of one neural network on the other, and how they are altered in AVH schizophrenics in comparison to neurotypical participants. EC was recorded by collecting resting state-fMRI data of each participant and analysing it using REST-GCA from the rs-fMRI data analysis toolkit. Two sampled t-test results for both conditions suggested that in the patient sample, aMPFC to left inferior temporal gyrus (ITG) showed considerably lower EC. In contrast, higher EC was evident from right middle frontal gyrus (MFG) and left cerebellum posterior lobe (CPL) to aMPFC. These are secondary regions in the brain that overlap the aforementioned primary regions, and hence, explain the neural fluctuations on a deeper level (Zhao et al., 2018).

Central Executive Network

As the hub of integral cognitive processes, the central executive network (CEN) involves vital brain regions like the dorsolateral prefrontal cortex (dlPFC), anterior cingulate cortex (ACC), and the lateral parietal cortex (LPC) (Alderson-Day, 2016). Spanning areas across frontal and parietal lobes, this network is responsible for working memory, attention, problem solving and goal-focused behaviour (Taylor & Francis, n.d.). Despite showing heightened BOLD (blood oxygen level dependent) activity in fMRI scans during tasks requiring heavy cognitive processing, it is still classified as a resting state network due to its intrinsic connectivity even when the brain is at rest. This has been linked to the CEN's ability to switch between high-frequency external task performance and low-frequency resting states (Sbaihat et al., 2021). Its activity is inversely correlated with that of the DMN, as it reportedly becomes inactivated when DMN becomes active in absence of external stimulus and vice versa in a stimulus-driven context (Young et al., 2023). This compliments the aforementioned roles of the CEN that contribute to cognitive functioning.

The impacted connectivity within the CEN and with other neural networks in the framework of schizophrenia and AVH has been explored to a significant extent in recent studies. Although Wolf et al. 's (2011) research focused more on DMN functioning, it also considered malfunction in the central executive region by scanning it along with multiple other RSNs in an fMRI, followed by statistical tests based on mean voxel weights deduced from the scans. Voxels are three-dimensional versions of pixel-like units in medical scans that represent a value of intensity, which in this paper's context, would indicate blood oxygenation intensity and in turn, neural activity (Kou & Tan, 2007). After data analysis, results displayed significantly decreased connectivity specifically in the left precuneus alongside increased connectivity in the superior and right middle frontal gyri (Wolf et al., 2011). It is important to note that certain RSNs overlap and share subregions, for instance, the precuneus and superior frontal gyrus are included in both the CEN and DMN (Liu et al., 2017). Hence, these were considered while analysing CEN connectivity in Wolf's study. In addition, Geng et al. (2020) attempted to gather more neuroimaging evidence on RSN dysconnectivity in AVHs and primarily suggested a reduction in neural activity between CEN and language networks when compared to neurotypical controls. This indicates that in schizophrenics experiencing AVHs, the CEN not only displays dysconnectivity within the network but also with other outer networks in the brain as well.

Salience Network

To manage the function of self-control in decision making and general actions, the salience network (SN) is surely an essential component. It involves regions like dorsal anterior cingulate cortex (dACC) and anterior insula (AI) that are key to filtering out context-irrelevant information and focusing on behaviourally relevant information (Stein et al., 2025). It also extends to the ventral striatum region (VS) and amygdala, and benefits from their ability of salience processing and reward assessment. Therefore, intricate connectivity between these regions during a resting state may suggest that the SN is in charge of analysing situational information, processing emotional and social aspects of it, and making a decision that displays self-awareness or control in that particular context. Interestingly, this network is unique because it acts as a liaison between the CEN and DMN and switches their functioning based on the present stimulus. In regards to self-control, prior studies have indicated the SN's detection of salient stimuli, followed by the delivery of control-related signals to the CEN which will contribute to the appropriate goal-focused behaviour. Simultaneously, this inter-RSN connection results in the deactivation of DMN,

explaining the previously mentioned antithetical working of the default and executive systems (Stein et al., 2025).

SN activity with respect to schizophrenic auditory hallucinations has also been questioned and studied, especially in Mallikarjun et al.'s (2018) research. Although it mainly focused on an overarching concept of first episode psychosis, half of the sample also included individuals with a recent diagnosis of schizophrenia. Researchers used a symptom-capture (sc) fMRI to accurately record AVH activity for ten minutes when the participants' brains were at rest. Participants were also given a button, which they were told to press for the entire duration of an AVH experience whilst inside the machine. Symptom capture analysis was one of the primary processing modes that was utilized because it scanned the fMRI images, combined them based on participant groups and helped with comparative analysis of activated brain regions. Two main inferences were made; firstly, regions like superior temporal cortex, precuneus and insula showed heightened activity in individuals experiencing AVHs. The involvement of insula highlights the relevance of salience networks in this context alongside sensory and memory-based regions. Furthermore, the angular gyrus of the DMN and the insula displayed increased connectivity. The researchers proposed that aberrant links between the DMN and SN can significantly point towards AVH formation, while reduced linkage with claustrum indicates lack of multi-sensory integrated information (Mallikarjun et al., 2018).

Sensorimotor Network

The previous RSNs mainly pertained to cognitive aspects of functioning. However, the sensorimotor network (SMN) extends to tasks that integrate sensory information processing as well as the planning and execution of voluntary motor movements. t plays a key role in somatosensation and proprioception, which is the perception of the body's positioning and motor actions. To facilitate this, this network spans over regions like the supplementary motor area (SMA), somatosensory cortex, primary motor cortex (M1) and the premotor cortex (PMC) (Sahrizan et al., 2025) . Unlike the other three RSNs, SMN does not have expansive literature on its functionality at rest in schizophrenic patients with AVH. This is because most studies focusing on the SMN were conducted with respect to language regions whilst conducting an auditory language task, which cannot account for resting state neural activity (Alderson-Day et al., 2016).

However, a study by Kauffman et al. (2015) aimed to understand the disintegration of sensorimotor networks in schizophrenia. Functioning MRI scans were conducted on 71 schizophrenic patients and 196 healthy individuals, after which differences in their neural activity were mapped out by deducing the standard deviation of signal amplitudes (SDSA) as seen in their measured BOLD signals. With the SDSAs, network analysis of nodes and edges was also conducted to assess connectivity within regions and between regions respectively. The primary finding reflected upon the disintegration of thalamo-cortical connections involving thalamus nodes. Considering thalamus' purpose to relay information between cortical regions involved in motor and perceptual processes, significant reduction of these links can justify how schizophrenia does not merely cause cognitive disruptions, rather, it is a whole-body experience of discomfort that takes over sensory processes, produces hallucinations like AVH, and impacts motor outputs of the patient (Kauffman et al., 2015).

Implications

While the neural changes in the RSNs of schizophrenics experiencing AVHs has been highlighted extensively, it is important to extend those inferences and understand how they are manifested into schizophrenic behaviour. Firstly, the DMN displaying reduced connectivity between the aMPFC and left ITG might indicate that in schizophrenics, vital cognitive functions like self-referenced information processing, reasoning abilities and language processing are heavily jeopardised during auditory hallucinations (Koshino et al., 2011; Onitsuka et al., 2004). This can explain how during an AVH, patients can misattribute their inner speech and hence, display abnormal verbal cognition (Alderson-Day & Fernyhough, 2016). In addition, increased connectivity between right MFG and the aMPFC can be correlated to higher inhibitory control over memory (Munakata et al., 2011). Since prior research suggests that schizophrenics face issues with controlling or intentionally inhibiting unnecessary memories, this effect can be interpreted as additional effort to establish that control, something which was not expressed in neurotypical individuals.

Meanwhile, lesser connectivity in the left precuneus of the CEN might indicate flawed linkage between the patient's personal identity and their past experience (Blihar et al., 2020). This can be meaningful while understanding the inner voice during AVHs, as that voice can resemble auditory information from the patient's autobiographical memory. As a result, inhibited precuneus activity can distort the patient's reality, mix it with aspects from past events and give rise to hallucinations (Alderson-Day & Fernyhough, 2016).

In the salience network, heightened activity in the superior temporal cortex at rest can be associated with higher auditory processing (Bigler et al., 2007). Such activity in absence of any external stimuli can explain the occurrence of auditory hallucinations, as the patients' brain appears to process information in spite of any auditory source. In terms of inter-region connectivity, more activity between the angular gyrus and insula can suggest that schizophrenics may attempt to regulate their hallucinations by filtering out irrelevant information and integrating relevant multisensory information to make sense of events at present (Seghier, 2013). Since the angular gyrus is a part of the temporoparietal junction and therefore, the DMN, its activity in AVH condition contradicts that in the neurotypical context, where the DMN is deactivated for salience-based tasks (Mallikarjun et al., 2018).

Lastly, the disintegration of thalamo-cortical links in the sensorimotor network can also imply differing motor movements in patients. An old study by Putzhammer and Klein (2006) quantitatively analysed motor disturbances in schizophrenic patients and observed that when compared to healthy controls, patients had slower gait velocity or walking speed. However, this particular inference has limitations, for it is an old study and does not focus on patients with AVH. Therefore, more research is needed to fully

comprehend motor abnormalities in this context. It is also necessary to acknowledge that these findings may not provide an encapsulated picture of neural activities during AVH. Since these implications were mostly stated with reference to a few studies, they possibly did not capture the nuances of the plethora of aberrant activities in schizophrenia. Therefore, this can be considered an oversimplified understanding of said activities and can be open to further research-based interpretations.

In short, research on AVHs in schizophrenia is an ever-growing avenue in neuroscience, especially with respect to RSN activity. Earlier studies often explored this behaviour in presence of certain stimuli; however, examining this phenomenon at rest is integral to isolate the condition and understand its complexities at a deeper level. In the general population, knowledge about schizophrenia is still quite limited. Hence, with fMRI techniques and advanced analysis methods, more reliable implications must be discovered in order to raise basic awareness of this disorder in a simplified manner.

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ASHOKA PSYCHOLOGY REVIEW

Beauty Lies in the Eye of the Beholder: The Cognitive, Social and Biological Dimensions of Aesthetic Judgment

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Introduction

It is often said that "beauty lies in the eye of the beholder," which implies that aesthetic judgment is entirely a matter of personal preference. While individual differences certainly shape perception, social psychology suggests that shared cognitive and cultural factors also influence what individuals consider beautiful (Langlois & Roggman, 1990). Research on social perception and consensus formation indicates that people often converge in their judgments of attractiveness, art or natural scenery due to common evolutionary biases, cultural norms and social learning processes (Moussaid et al., 2013). Thus, it can be understood that beauty is not just universal but also subjective, which makes it a unique topic for psychological inquiry.

Psychology helps one move beyond opinions and look at actual evidence from different fields of psychology. Cognitive psychology is the study of the mental functions of perception, attention, memory, language and thinking by cognitive scientists (Kellogg, 2003). In the context of beauty, this includes specific areas such as theories of visual perception, the role that selective attention plays in determining which features we focus on, memory processes that make familiar stimuli feel more attractive and the interaction between raw sensory input and its cognitive interpretation in the brain. Social psychology studies the impact of a social situation on individual behaviour (Hewstone & Stroebe, 2021). For the study of beauty, this involves research on cognitive biases like the halo effect, stereotypes about attractiveness, group norms surrounding appearance, in-group/out-group preferences, conformity and how social comparison shapes a person's self-worth. It also includes cultural exposure and the influence of the media on what people learn to see as "beautiful."

Together, these fields come together to indicate that beauty is not simply about "what you like" but rather, it is a product of your perception and context. The study of beauty is not trivial because someone's judgments of attractiveness influence real decisions, who someone hires, who they date, who they choose to trust (Efran, 1974). Psychologists have shown that people give more opportunities and lighter punishments to those whom they consider "beautiful", something we casually refer to as "pretty privilege" (Knox & TenEyck, 2023). On a larger scale, industries like fashion, advertising or film are heavily dependent on shaping and selling beauty ideals. Understanding how beauty works can make people learn not only about perception but also about power, identity and the influence that all of it has on the way they think and form opinions.

This paper explores beauty as cognitive, social, biological, and at the intersection of all of these. The cognitive view looks at the mind and how it reacts to visual features that it may find appealing, such as symmetry and averages, which are often processed as indicators of genetic health and fitness (Rhodes et al., 1998). From a biological standpoint, these preferences are thought to have evolved because they signal traits that are associated with survival and successful reproduction (Langlois & Roggman, 1990). The social view, in contrast, looks at how culture and peer groups form and how they reinforce standards of what is considered "attractive" or "beautiful" (Little, Jones & DeBruine 2011). This paper aims to look at beauty from all three of these perspectives; by doing so, beauty emerges not as something that is random or purely subjective, but as a process that is shaped both by biological predispositions and the impact of social influence.

Cognitive Dimensions of Beauty

Symmetry and Proportion

Symmetry is one of the most consistent predictors of attractiveness across different cultures and contexts with faces that are more symmetrical being judged as being healthier and more appealing (Rhodes et al., 1998). Evolutionary psychologists argue that this comes from survival instincts: symmetry signals, genetic stability and resistance to disease (Little, Jones & DeBruine, 2011).

Rhodes et al. (1998) also linked facial symmetry to attractiveness, however, their method created a very clear limitation, which was that they built perfectly symmetric faces by mirroring original images. These faces did not match real human faces, which naturally show minor asymmetries. Readers should know that participants responded to engineered images, not real symmetry in

everyday faces. Later work showed that these edited faces often look more average. This means the effect in the study might reflect facial normality or other uncontrolled features. The study still had influence on the field, but its ecological validity stays limited.

Ratios are of importance as well, with artists and architects speaking about the "golden ratio." In psychology, the golden ratio refers to a proportion that is believed to be naturally pleasing and often associated with perceived beauty and harmony in faces, art and design. It may influence how attractive or balanced something appears, but evidence for its effects in psychology is mixed (Naini, 2024). Singh (1993) reported that men rated a waist-to-hip ratio of 0.7 as most attractive in women. He linked this ratio to health, hormone profiles and fertility. Singh also explained that a lower waist-to-hip ratio reflects the influence of female sex hormones like estrogen, which shape fat distribution in females, which happens in connection to fertility and reproductive health. This work showed that men used waist size more than overall weight when they judged attractiveness in women. It was found that men had stronger preferences for lower waist-to-hip ratios in younger women. These studies show how you form quick judgements from simple body proportions, they also show how visual proportion affects snap judgments.

Average and Familiar Faces

Langlois and Roggman (1990) showed that digitally averaged faces, composites of multiple faces blended together, are rated more attractive than the originals. This is the concept of processing fluency, which means that when something is simple to perceive, the experience is more pleasing (Reber et al., 2004). Familiarity works in a similar way, with the exposure effect showing that the more that people see a face, the more they will like it (Bornstein & Craver-Lemley, 2022). It is also important to note that the averaged faces in the study by Langlois and Roggman (1990), were taken from the same population as the raters, which likely increased their familiarity and cultural relevance, suggesting that social factors like shared norms, common facial features and exposure within a community also shape what people find attractive.

Biases in Judgment

Perception of beauty and attractiveness also shapes how people treat others. The halo effect is a cognitive bias where a positive impression of one trait influences your opinion of other unrelated traits. While judging beauty, the halo effect for example, causes us to assume that if a person looks nice, friendly or attractive at first glance, we tend to assume they have other good qualities too, even without evidence. This works the other way too: a bad first impression can make us assume more negative traits, so the halo effect causes people to assume that attractive people are smarter, kinder and more successful (Dion, Berscheid & Walster, 1972). This bias appears almost everywhere from schools and workplaces to even courtrooms.

For example, judges in Efran's (1974) study gave lighter sentences to attractive defendants. He showed that people rated attractive offenders as less guilty and recommended lower punishment compared to unattractive offenders. His results show how judgments shift when you focus on appearance instead of the facts of a case. This bias is hard to prove and so, what looks like "just beauty" ends up influencing something as basic as justice and opportunity without many even realising.

Social Dimensions of Beauty

Cultural Relativity

The standards of beauty are shaped by cultural and contextual factors and also tend to change with time. For instance, many Western cultures often idealise thinner body types, whereas in some African societies, fuller figures are traditionally more desirable (Swami, 2015). These exceptions aren't set in stone and tend to shift with time. During the Renaissance, pale skin and fuller figures were celebrated and more accepted (Roller, 2008). Today, tanned skin and athletic bodies are more popular. These shifts in standards of attractiveness show how culture overlays with biological changes and causes shifts in the understanding of beauty.

Social identity theory is an interactionist social psychological theory of the role of self-conception and associated cognitive processes and social beliefs in group processes and intergroup relations (Hogg, 2016). People don't just judge beauty as an individual; but rather they do so as a member of a community, a culture and a group.

Media and Globalisation

The media that we see and consume plays a major role in shaping modern beauty standards by influencing what we pay attention to and what we learn to see as "normal" (Fardouly, 2015). Social media platforms are full of heavily filtered and edited photos that promote a very limited version of beauty, in other words, it's very far away from what real people look like. This usually means people on these platforms have clear skin and a slim figure, which appear repeatedly across movies, influencers and brand campaigns. These features are shown over and over again, which causes them to become familiar, and familiarity itself can make them seem more attractive. As a result, many people, especially younger women who are still forming their sense of identity, begin comparing themselves to these repeated images that they see online and start to feel dissatisfied with the way that they look.

While movements like body positivity and body neutrality have come up and aim to challenge these narrow standards, they also come with their own complications. Body positivity was originally encouraged to be the acceptance of all body types and sizes, especially marginalised ones, has over time been commercialised in ways that still favour only certain "acceptable" forms of difference, often still within a socially comfortable range of size, shape or appearance. Body neutrality emerged partly as a response to this, focusing less on loving how you look and more on not tying your self-worth to appearance at all. These movements show that while there certainly is some amount of pushback against traditional beauty pressures, the alternatives can also become constrained or selectively inclusive, showing how complex and deeply rooted beauty standards really are.

Biological Dimensions of Beauty

Evolution of Aesthetic Preference

The biological study of beauty begins with understanding evolution. By doing so, we can understand that what we perceive as "beautiful" is a signal for underlying genetic fitness, describing traits that improve the chances of survival or reproduction. Evolutionary psychologists suggest that humans are predisposed to respond positively to physical cues such as clear skin, symmetry and youth because they indicate good health and fertility (Rhodes, 1998). These responses occur automatically, as a result of socially learned responses and not because of conscious reflection. What this means is that the mind interprets certain physical markers as evidence of a strong, healthy mate or ally. Research by Little, Jones, and DeBruine (2011) supports this, by arguing that facial symmetry signals developmental stability and resistance to disease. In their review, they discuss that more symmetric faces correlate with lower fluctuating asymmetry, which is itself associated with better health outcomes. However, they also admit that the relationship is moderate: symmetry does not predict all indicators of genetic quality or disease resistance, and other cues (like skin texture or averageness) contribute significantly to health impressions. This suggests that while symmetry does play a role, our judgments of health and attractiveness come from a combination of cues rather than just a single reliable signal.

Health and Fertility

Beyond facial features, the shape of a person's body can also be an indicator of information that is biologically significant. As mentioned earlier, Singh (1993) famously found that men rated a waist-to-hip ratio (WHR) of about 0.7 as most attractive in women, linking it to optimal fertility and hormonal balance. Similarly, a broader shoulder-to-waist ratio in men tends to be a signal for physical strength and testosterone levels (Sell, 2008)

Bovet et al. (2019) expanded on this research by talking about how facial attractiveness and perceived health are judged and how these judgments relate to body symmetry and skin condition. The authors argued that a person's visible skin condition may signal aspects of underlying health more directly (like immune function, youth or skin robustness) than geometric symmetry, which may be more loosely related to genetic quality.

Neurobiological Reward Systems

Beauty activates specific reward circuits in your brain. In the PNAS study by Cela-Conde et al. (2009), activity in the right medial orbitofrontal cortex (mOFC) increased significantly with facial attractiveness ($F(2,19) = 6.80$, $p < 0.01$). The mOFC is strongly associated with reward evaluation, subjective pleasure and assigning positive value to stimuli, so the rise in its activity suggests that attractive faces are being coded as more rewarding or pleasurable to look at. They also found that stronger functional connectivity ($r = 0.46$, $p < 0.05$) between the mOFC and the left hippocampus when viewing faces rated as beautiful. Since the hippocampus is involved in memory formation and contextual associations, this connectivity implies that attractive faces may not only feel rewarding but may also become more strongly encoded or linked to positive associations in memory. Concurrently, the authors note a limitation to their study: their fMRI resolution may not cleanly isolate mOFC signals, so nearby regions (like the anterior insula), which plays a role in emotional awareness and subjective feelings, might also contribute to the observed activation. These findings suggest that aesthetic appreciation is not entirely psychological but also neurologically rewarding, connecting beauty to the same dopamine-based systems that drive motivation and positive emotion.

Interplay Between Cognitive, Social and Biological Factors

Beauty judgments are the complex outcomes of multiple systems working together. Biology provides the foundation through the concepts of bodily symmetry, hormonal cues and reward circuits, but cognition and culture shape the meaning that these have. A waist-to-hip ratio may biologically indicate fertility (Bovet et al., 2019), yet fashion and media determine whether that shape is celebrated or suppressed.

Berlyne's (1967) collative-motivational model explains how your arousal level shapes response to art and other visuals. He argues that every stimulus raises arousal. This arousal includes physical changes in the brain and changes in behaviour, like how focused or motivated one feels. When the arousal level is in a comfortable range, people are more likely to find the stimulus appealing.

Berlyne's (1967) arousal theory and Reber's (2004) processing fluency theory explains how these biological cues are filtered through perception. Thus, a symmetrical face may trigger both a biological sense of health and a cognitive sense of ease, which can together form what feels like "beauty." In this way, beauty becomes conceptualised as a psychological experience that takes place when biological cues (like symmetry or skin quality) interact with cognitive processes such as ease in perception and familiarity.

In the age of artificial intelligence, the process of identifying what is beautiful is becoming increasingly complicated. AI-generated filters and algorithmic curation warp our understanding of beauty by blurring the lines between what is actually real and what is not, reshaping standards of human judgment. The result of this becomes a feedback loop where biology, culture and technology continuously work together to influence the ideas of beauty.

Critiques and Emerging Perspectives

Some argue that psychology's search for universal beauty ignores power. Feminist scholars show how standards of beauty often exclude people of colour, nonbinary identities and working class bodies (Tate, 2009). The global spread of Western ideals through the media also raises questions about cultural dominance.

Neuroscience brings another concept to this. Neuroaesthetics is a relatively young field within cognitive neuroscience, concerned with the neural underpinnings of aesthetic experience of beauty, particularly in visual art (Cinzia & Vittorio, 2009). Neuroaesthetics uses brain imaging to see how people respond to beauty. Cela-Conde et al. (2009) found similar brain activation in men and women while viewing art, suggesting that there are some shared neural processes between the sexes. However, responses showed

variation with cultural context. These findings suggest that the genders' biological response to beauty are not fixed or universal but rather change as a result of one's cultural context. Even if the brain systems are similar, a lot of environmental factors like culture and aesthetic exposure can cause differences in judging beauty.

Today, technology complicates the picture further. AI-generated filters produce “ideal” faces that millions want to copy. Judgements are shaped more by algorithmic aesthetics and less by individual perspectives and opinions. This raises an important concern, are people responding to human beauty or machine learned training? A study by Fardouly et al. (2015) found that exposure to idealised and filtered images on social media increased body dissatisfaction and appearance comparison among women. The images that participants judged as “attractive” or “beautiful” were typically those that were conforming to algorithmically amplified beauty standards like smooth skin, symmetry and slimness, suggesting that their judgments were influenced more by the aesthetic logic of digital platforms than by personal preference.

Conclusion

By the end of this paper, what becomes clear is that beauty is not a simple trait that people “just know” when they see it. My main takeaway from reviewing cognitive, social and biological research together is that beauty works more like a psychological event that occurs inside a person’s brain, not as a property that sits inside a face or body. It is an integrated way of thinking about beauty as something produced through the interaction of perception, culture and the biological cues that the brain has learned to treat as meaningful.

One key insight that emerges is that even when a person thinks they are making an individual, private judgment of attractiveness, that judgment is already shaped by many things such as fluency, bias, exposure, memory and cultural training. At the same time, these social and cognitive influences don’t fully erase the biological tendencies that humans have been evolved with. Instead, they work alongside them, mostly working over what is already decided by the brain. For example, symmetry may biologically signal health, but what counts as a “beautiful face” today is often the result of media repetition or the way that social media algorithms are built rather than the evolutionary meaning of symmetry itself. The same applies to body ideals, where cultural pressure can oftentimes override or even contradict the already present biological cues that are there.

A second contribution of this paper is tracing how beauty operates as a form of power. Understanding attractiveness as something built by psychological mechanisms shows why beauty isn’t harmless or superficial and affects everyday life more than we think. It affects memory, judgment, opportunities and the way people are treated in everyday life. Recognising this makes it easier to see how beauty standards create dividends and fuel inequality, especially when only certain bodies or faces are consistently validated within the existing beauty standard. This perspective matters now more than ever because things like AI-generated aesthetics are beginning to define “normal” and pushing people away from their own features and closer to patterns that they have been forced to learn by machines.

Finally, one of my strongest conclusions is that beauty does not sit at either extremes of the debate, neither is it completely universal nor completely subjective. Its power comes from the fact that it is both: partly a biological template and partly a cultural instruction, and because beauty is produced this way, it can also be changed. The real challenge going forward is not to pretend beauty doesn’t matter, but to understand how deeply it influences people and how that influence can be made fairer.

In this sense, the phrase “beauty lies in the eye of the beholder” is not completely wrong, but incomplete. The beholder is a product of evolution, culture, memory, algorithms and everything in between. This paper shows that recognising these layers doesn’t ruin the idea of beauty, but rather it simply makes it more available and acceptable to a larger audience or people being affected by what beauty truly means.

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ASHOKA PSYCHOLOGY REVIEW

Breaking the Chains: Reintegration, Trafficker Mindsets, and Prevention

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Introduction

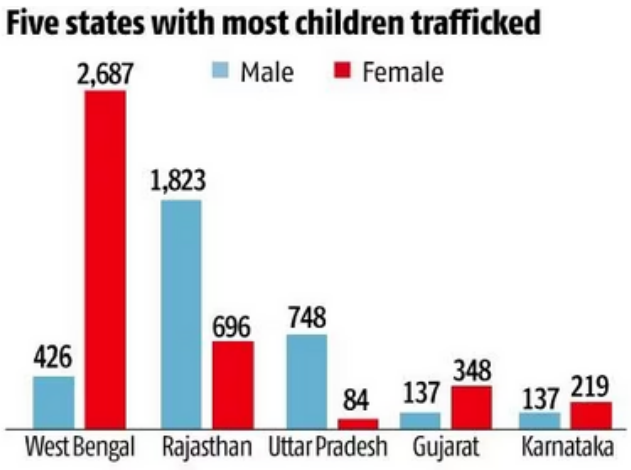
Human trafficking, defined as the use of force, fraud, or coercion to exploit individuals in labor or sex work, is a global crisis impacting millions annually (Swaniti Initiative, n.d.). Victims endure physical and sexual abuse, forced labor, and severe exploitation. This paper delves into the selection process of victims, the psychology of traffickers, the industry's structure, and the factors that contribute to this human rights violation. In addition , it explores the long-term psychological impacts on victims, the international legal framework, and the crucial process of reintegration back into society. Finally, it analyses the societal impact of trafficking and potential solutions for prevention.

This paper aims to identify effective societal measures that facilitate victims' reintegration. To achieve this, it will investigate the long-term psychological consequences of trafficking and explore strategies for recovery. Additionally, it will examine the factors driving trafficking, the mindset of perpetrators, and the societal impact of this crime. Finally, the paper will evaluate preventive measures based on news and legal sources, peer-reviewed articles, UN and government guidelines, care handbooks, google scholar sources and various other sources.

Survivors of human trafficking experience lasting psychological trauma, including complex post-traumatic stress disorder (C-PTSD), depression, anxiety, and dissociation (mention specific sources here). Effective reintegration requires trauma-informed care, a non-judgmental support system, and comprehensive services. Research suggests traffickers often exhibit psychopathic traits and lack empathy (mention specific sources here).

Background

Human trafficking remains a pervasive issue in India, with a significant disparity between reported cases and convictions. Between 2018 and 2022, over 10,000 cases were recorded, but only a mere 4.8% of arrests resulted in convictions. This low conviction rate highlights the challenges in prosecuting traffickers, often exacerbated by corruption influencing various stages of the trafficking process (Singh, 2024). Corruption influences every stage of the human trafficking process; it is present from the initial planning to the point where a victim is trafficked and the person's exploitation begins (Robinson, n.d.). An average of 5,000 persons per year, are arrested for being involved in human trafficking; the highest was in 2022 at 5,648 persons.



The findings released by National Crime Record Bureau (NCRB) show West Bengal as the hub of human trafficking in India, followed by Tamil Nadu, Andhra Pradesh, Karnataka and Maharashtra with Delhi as the transit point.

West Bengal is considered one of the most active places for trafficking, serving as a central location not only for intra and inter-state but also for international trafficking (Human Trafficking in India and West Bengal - International Conference on Anti Human Trafficking Initiatives: Theory to Practice, n.d.). West Bengal has an international border with three countries: 2,217 kms with Bangladesh, 92 kms with Nepal and 175 kms with Bhutan This geographical position makes West Bengal a haven for traffickers with nearly all its districts being vulnerable to trafficking. This state is especially vulnerable due to its high population of poverty-stricken scheduled castes and scheduled tribes. In West Bengal, according to a government report, around 63% of girls get married in their adolescence. Child marriage is a common pathway through which sex trafficking occurs. Bonded labour and social inequality

are also significant contributors to trafficking. Gender inequality is rampant with female children being perceived as burdens to the family. A lack of awareness about the problem contributes to its persistence (Alam, 2022).

The International Labour Organization (ILO) estimates that globally, 24.9 million people are victims of human trafficking, with a staggering success rate of only 1% in rescuing victims (*"Only One Out of 100 People Are Rescued" From Human Trafficking*, 2021). This underscores the urgent need for comprehensive strategies to combat human trafficking. To effectively address this issue, a multi-faceted approach is required, encompassing both law enforcement and social justice initiatives. Strengthening legal frameworks and improving law enforcement capabilities are crucial steps. However, it is equally important to address the root causes of vulnerability, such as poverty, inequality, and lack of education. By investing in social and economic development, empowering marginalised communities, and promoting awareness about human trafficking, we can work towards creating a society where such exploitation is eradicated.

Victim selection and vulnerability

The vulnerability of women and children, exacerbated by societal factors such as poverty, gender inequality, and limited access to education and opportunities, makes them prime targets for human traffickers, particularly in regions like West Bengal, India. Individuals from marginalised communities, particularly those experiencing poverty, homelessness, or addiction, are disproportionately targeted by human traffickers (Kangaspunta et al., 2008b). Traffickers exploit these vulnerabilities by offering false promises of a better life, manipulating emotional needs, and leveraging threats and coercion. In addition, factors such as gender inequality, cultural norms, and limited access to education and opportunities can further increase an individual's susceptibility to trafficking (Polaris, 2023).

Children are exploited for the purposes of forced begging, child pornography, or sex. Children are sometimes favoured as labourers because their small hands are deemed better for untangling fishing nets, sewing luxury goods or picking cocoa. Children are also enslaved as soldiers in war zones. In 2022, India witnessed a staggering 8.7% increase in child abuse cases, reaching a total of 162,000 incidents, as reported by the National Crime Records Bureau (NCRB).

Women make up two thirds of the world's human trafficking victims; they are mostly lured into trafficking with false promises of employment and then raped, drugged, imprisoned, beaten or threatened with violence. Women victims of human trafficking may also have debt imposed on them, or have their passport confiscated and are blackmailed. According to Human Rights Watch, India has more than 20 million prostitutes, with 35% of them starting their careers while they were under the age of 18. Thus, human trafficking is one of the main reasons behind the growth of this profession.

Men and boys may be victims of human trafficking for the purposes of forced labour, forced begging and sexual exploitation, and enlistment as child soldiers. There is less data on trafficked men since anti-human trafficking legislation around the world tends to focus on trafficking of women and children or trafficking for the purpose of sexual exploitation, of which most victims are women instead of focusing on forced labour of which victims are usually men (Kevin.Town, n.d.).

Mindset of Human Traffickers

Human traffickers can come from varied backgrounds and operate independently or as part of organised crime networks. The lucrative nature of human trafficking makes it attractive to criminals and criminal organisations. Human traffickers often lack empathy and exploit their victims purely for financial gain.

Common characteristics of human traffickers include traits often associated with psychopathy, including a lack of empathy, manipulation, and superficial charm. These traits are an outcome of an overdeveloped id and underdeveloped superego and ego. The id is the pleasure principle that promotes instant gratification and if it is overdeveloped then the ego and superego have trouble controlling it, and according to Freud, the person gives into their unacceptable thoughts and desires. A study was conducted by the DePaul University College of Law, which surveyed 25 male ex-pimps and madams who operated in the Chicago area. This study provided insight into the minds of traffickers and the common characteristics in their backgrounds; it also displays their thought processes, actions and motivations for engaging in sex trafficking (Staff, 2021).

The study found that the vast majority of human traffickers experienced physical or sexual abuse at a young age and commonly observed their mothers being beaten by men in their lives. This type of trauma at a young age contributes to their desensitisation to human suffering. One of the study's participants reported that she was sexually abused beginning at the age of six. She shared that she was a sex trafficking victim to "whoever my mom, a prostitute heroin addict, wanted to sell me to." These traumatic events, betrayal by parents, and unmet emotional needs during these formative years can result in a fragmented ego or a maligned development of the superego, which may be what resulted in criminal tendencies in these cases (Lh-Prince, 2024). Human traffickers often experienced neglect and abuse, which may unconsciously lead them to harbour anger and resentment, which could surface later in life as aggressive or unlawful behaviours.

The study found that all of the women who acted as *madams*, began to sell their own bodies for sex at the average age of 14 prior to becoming a madam. They also forced others to engage in commercial sex acts. The trauma of being sold into trafficking led them to become traffickers as a defence mechanism because it gave them a sense of control.

Traffickers often employ psychological manipulation techniques to groom victims, creating a false sense of security and dependency. This process, often involving love-bombing, gaslighting, and isolation, can desensitise potential traffickers to the exploitation of others, perpetuating the cycle of human trafficking; they create a rapport with their victim and provide lavish gifts, which the victim must later pay for by performing commercial sex acts. Human traffickers are understood to have no true empathy or feelings for

their victims. They commonly force sex trafficking victims into using drugs as a way to combat trauma and emotional distress due to exploitation. Lone traffickers "groom" their victims by creating a rapport with them based on false promises and the victims' belief that the trafficker truly cares for them (Staff, 2021). Coercion is also used as a tactic to control victims and it works as the victim is completely dependent on the trafficker for everything.

Human trafficker's minds may also distort the situations by framing them under more acceptable terms. For example, traffickers may convince themselves that they are helping a country's labour shortage by engaging in bonded labour (*Justifying Human Trafficking: The Mind of a Trafficker - End Slavery Now*, n.d.). Traffickers also use faulty reasoning to convince themselves that they have done no wrong by comparing themselves to other traffickers in order to dissociate themselves from the brutal manifestations of human trafficking, or by stating that they treat their victims better than other traffickers.

Dehumanisation strips people of their identity, and makes it so that they are viewed as inferior and deserving of exploitation. Socially accepted norms like caste systems and gender-based violence make the dehumanisation process easier, if not automatic. Human trafficking thrives in societies where certain groups of people are already marginalised and abused and where perpetrators go unpunished because they're not perceived to have committed wrongdoing against a 'valid' person.

Factors Contributing to Human Trafficking

Human trafficking is driven by a number of factors, primarily revolving around vulnerability and economic incentives. Within the next 10 years, crime experts expect human trafficking to surpass drug and arms trafficking in its occurrence, cost to human well-being, and profitability to criminals (TV; *Economics of human trafficking*).

Poverty, lack of education, and unemployment make individuals susceptible to traffickers' promises of better opportunities in the form of job opportunities. Economic vulnerability includes unemployment and lack of access to equal opportunities. These conditions induce people to migrate in search of better living conditions. Flows of economic migrants travelling through legal avenues can provide opportunities for traffickers to victimise migrants who, having left the protection of their communities, are vulnerable to exploitation. Marginalised groups, such as minorities and migrants, are at higher risk due to social exclusion and discrimination. In general, low-income and low-skilled individuals are more susceptible to false promises of work and pay from traffickers, who may deceive and coerce them into situations of trafficking (Katharina.kiener-Manu, n.d.).

The profitability of exploiting cheap labour and the demand for commercial sex create opportunities for traffickers. By trafficking humans, they can save a large amount of money in labour and sex workers. An estimate states that the global profits made from forced labourers exploited by private enterprises or agents reach US$ 44.3 billion every year, of which US$ 31.6 billion from trafficked victims (Belser & International Labour Office, 2005).

Inadequate laws and enforcement mechanisms in many countries enable traffickers to operate with impunity. The law has made many provisions for dealing with human trafficking but we need to make them more effective. We need to improve information exchange on trafficking routes, trafficker profiles and victim identification in order to dismantle criminal groups and convict more traffickers. The core of trafficking prevention activities should therefore be the provision of alternatives to the individuals who are the most vulnerable. When confronted with a potentially exploitative situation, they should know that they have choices (Kangaspunta et al., 2008).

Industry Valuation

The idea that humans can be bought and sold implies that, either their organs or their entire body, have some kind of economic value. The key factors influencing the supply side of human trafficking are poverty, globalisation, social practices, natural disasters and governance. On other hand, factors like demand for labour in sectors like commercial sex work (CSW), brick factories etc. determine the demand side of trafficking (www.swaniti.in, n.d.).

Human trafficking is estimated to generate US$169.9 billion from sexual exploitation, US$75.9 billion from forced labour in the private sector, including domestic servitude. This is a striking total of US$245.81 billion, which is equivalent to at least 0.26% of the world's gross domestic product (Hewitt, 2024). Human trafficking is the second most lucrative black market, second to only the illegal drug trade (Human Rights First, 2017) (Human Trafficking – CWLA, n.d.).

Trafficking is a wide industry that affects many other industries including banking, hotels and health care. In banking, some red flags are customers being accompanied by someone who appears to control them, having multiple accounts in their own name, heavy use of cash, multiple charges on ride-hailing services (which sex traffickers are said to prefer over taxis because the traffickers can track their victims' rides in real-time via the app). The US Bank has placed measures to identify these inconsistencies and identify law enforcement.

Hotel chain franchises are often traffickers' preferred choice since they offer a sense of anonymity and safety. The Marriott Hotel chain has trained 500,000 employees to identify red flags since 2017 (Niethammer, 2021). Healthcare providers can also be trained to see evidence of people being subjected to abuse. Symptoms of domestic violence should be evaluated like bruises, bites, cuts, broken bones, concussions, burns, knife or gunshot wounds (Niethammer). They must be reported to the authorities if seen in patients.

Long-Term Psychological Impacts on Victims

Victims of human trafficking endure severe trauma before, during, and after their exploitation. The psychological effects are long-lasting, often manifesting as complex post-traumatic stress disorder (C-PTSD), depression, anxiety, and dissociative disorders. Trauma

and PTSD can manifest in the form of persistent nightmares, flashbacks, and severe anxiety are common. Victims may suffer from hypervigilance, emotional numbness, and avoidance behaviours. Trafficked individuals often develop a deep mistrust of others, making it difficult to form healthy relationships or seek help in the form of therapy. Victims can also struggle with a damaged sense of self-worth and identity, feeling shame, guilt, and low self-esteem. Physical abuse and neglect can lead to chronic health issues, including sexually transmitted infections (STIs), malnutrition, and substance abuse disorders. This is prevalent if human trafficking includes forced labour or sexual trauma. Trafficking survivors often feel isolated from society due to social stigma and a lack of understanding from others (Treatment, 2014).

Trauma can affect one's beliefs about the future as there is a loss of hope, limited expectations about life, fear that life will end abruptly or early, or anticipation that normal life events will not occur. Initial reactions to trauma can include exhaustion, confusion, sadness, anxiety, agitation, numbness, dissociation, confusion and physical arousal. Most trauma survivors are highly resilient and develop appropriate coping strategies, including the use of social support, to deal with the aftermath and effects. These victims could be susceptible to triggers and flashbacks as well. They may also encounter dissociation, depersonalization, and derealization (Treatment, 2014). They may also face self-harm and self-destructive behaviours and attempted suicide.

Victims of sexual assault experience post-traumatic mental challenges, acute stress disorders, depression and other psychological issues . Women often suffer from sleep disorders, nightmares, anxiety, depression, suicidal ideation, and diminishing of sexual urge and pleasure amongst other disorders following sexual assault or rape. Recovery is slower in sexual than in non-sexual assault victims. Factors influencing recovery are emotional support from friends, relationships, social and community support. Overall social changes in outlook and perception towards women are needed in modern society to curb the sexual assault on women.

Reintegration into Society

The reintegration of victims into society is a delicate balancing act, with multiple forces prevailing. They experience changes as an outcome of their lived trauma, and there is often a stigma that surrounds them in spite of their status as faultless victims.

Support services must recognize the impact of trauma and provide a safe environment that fosters healing both mentally and physically by providing trauma-informed care; it is crucial to offer unconditional support without diagnosing, judging, or pressuring victims to leave their abusive situations as in many instances a bond develops, making the victim attached to the abuser.

Comprehensive care, including medical, psychological, legal, and social services, is essential for the recovery of the mental, physical and financial health of the victim. Establishing trust through consistent and empathetic interactions is important for encouraging survivors to engage with support services and be able to form their own social relationships in the future.
Empowering survivors by involving them in decision-making, providing opportunities for education and offering employment can facilitate successful reintegration into society.

Law enforcement plays an important role in freeing victims, but the transition to survivorship is complex, with incomplete histories, misdiagnosis, and struggles in treatment. They are often mistrusting. Diagnosing, judging their choices or drawing conclusions about what they may be experiencing or feeling is ill-advised, as is judging or criticising their abuser due to any emotional attachment that may have formed. Victims of human trafficking can often not be pressured to leave the trafficker or abusive relationship as maybe their trafficker has threatened to hurt them, their family, or their children if they try to leave. One's primary goal must be to simply communicate to them that help exists, and that people who care about them want them to be safe (Helping human trafficking victims).

The organisation Kshamata works with human trafficking victims in India to upskill them and train them to help them get jobs. Kshamata 's mission is to touch lives and bring liberation by empowering women and adolescent girls faced with vulnerable and exploitative situations to become respected, productive and earning citizens by providing opportunities for training, employment and reintegration in society (Kshamata, n.d.).

Skill development programs help empower survivors of human trafficking, providing them with opportunities to regain their dignity, earn some income, build their confidence and live independently. Ujjwala Scheme in India focuses on reintegrating victims of commercial sexual exploitation and trafficking, however, its full impact is unclear as there are no audits conducted on shelter homes or reintegrated survivors. (Harnessing the Transformative Power of Skill Development Programs for Survivors of Trafficking | ThinkTwenty (T20) India 2023 - Official Engagement Group of G20, 2023).

Societal impact

Human trafficking does not only affect the victim but society at large; it also violates the philosophical legal dictate of a right in rem. It is a violation against society as it creates fear in people's lives and adds danger to our lives.

Due to rampant human trafficking and rape in India, Indian girls are often not allowed to leave their homes alone, thereby lose a lot of their independence. This dependence that is created makes them even more vulnerable.

Human trafficking for labour and sexual exploitation affects all members of society, from the trafficked person to their families and from the traffickers and buyers to the public at large. The impact of trafficking reverberates throughout the United States, extending far beyond the severe emotional and physical effects on the trafficked individual, and the disruption of family bonds and relationships. However, the true societal cost of human trafficking lies in its corrosive effect on the principles of individual freedom and fundamental human rights (*Moral and social effects of human ...*).

International Legal Framework

Since human trafficking is largely regarded as a human rights violation throughout the world, there are international frameworks in place to combat it. The Convention for the Suppression of the Traffic in Persons and of the Exploitation of the Prostitution of Others – United Nations treaty against human trafficking and Article 8 of the International Covenant on Civil and Political Rights (ICCPR) prohibits all forms of slavery, slave-trade and compulsory labour. The Human Rights Committee monitors its implementation (United Nations General Assembly, 1949).

Trafficked people are routinely deported from countries of transit or destination and their deportation to their home country can have serious consequences for victims. Victims of trafficking may be punished by the authorities for unauthorised departure, may face social isolation or stigmatisation, and be rejected by their families and communities; they may even be subjected to violence and intimidation from the traffickers and if not properly reintegrated are at serious risk for trafficking (United Nations, 2014).

Trafficking in Human Beings or Persons is prohibited under the Constitution of India under Article 23 (1) which prohibits trafficking in human beings and begar and other similar forms of forced labour. The Immoral Traffic (Prevention) Act, 1956 (ITPA) is the premier legislation for the prevention of trafficking for commercial sexual exploitation (Human trafficking). Article 39(e) and 39(f) ordain that the health and strength of individuals are not abused and that no one is forced by the economic necessity to do work unsuited to their age or strength and that childhood and youth should be protected against exploitation. Indian Penal Code, 1860, Bonded labour system (Abolition) Act, 1976, Child labour (Prohibition and Regulation) Act, 1986, Juvenile Justice Act, 2000, Goa Children Act, 2002; Prohibition of Child Marriage Act, 2006, Protection of Children from Sexual Offences (POCSO) Act, 2012 and 370A (IPC) provide for comprehensive measures to counter the menace of human trafficking including trafficking of children for exploitation in any form including physical exploitation or any form of sexual exploitation, slavery, servitude or the forced removal of organs also condemn trafficking (Rao et al., 2018).

Solutions and Prevention Strategies

How can we prevent human trafficking from taking place? Completely dismantle a billion-dollar industry that is so deeply rooted seems unlikely, but we can take measures to prevent it and solve it. Some measures we can take are enhancing laws and their enforcement to deter traffickers and protect victims and educating the public about the signs of trafficking and how to report it by holding campaigns. We also need to provide social services to at-risk groups, including housing, education, and employment opportunities to reduce their vulnerability. Enhancing cross-border collaboration to disrupt trafficking networks and ensure the safe return and reintegration of victims is very important and trafficking victims are often smuggled across borders. Increasing support and services for vulnerable people and change conditions – like homelessness, family violence, poverty and discrimination – that make people vulnerable to the lure of traffickers is very important (Polaris, 2023).

People, especially women and children are vulnerable to trafficking during ‘distress migration’ and from ‘disaster prone areas’- such as during floods, earthquakes, crop failures, riots, terrorist activities etc. Therefore, it is important to establish extra vigilance in this regard around transit points and at borders- inter-district/inter-state and international. The police should work closely with immigration authorities and other transport authorities, with Social Services, child welfare authorities and with any NGOs involved in service delivery for identifying/recognising and rescuing the victims. There should be effective patrolling and vigil at locations prone to trafficking such as highways, dhabas, railway stations and bus stations for suspicious movement of traffickers and victims and monitoring, through involvement of village community, the suspicious/ unnecessary movements of strangers in the villages (Sarkar et al., 2009).

Conclusion

Human trafficking involves the exploitation of individuals through force, fraud, or coercion. An estimated 600,000 to 800,000 people are trafficked across international borders annually, a stark reminder of the urgency to address this issue (Human Trafficking, n.d.).

Victims of human trafficking endure profound psychological trauma, often suffering from post-traumatic stress disorder, depression, and anxiety. Traffickers, driven by financial gain and a lack of empathy, exploit vulnerabilities to enslave their victims. The societal impact of human trafficking is far-reaching, affecting families, communities, and economies.

To combat this heinous crime, a multifaceted approach is necessary. Strengthening legal frameworks, raising public awareness, and providing comprehensive support services for survivors are crucial steps. Law enforcement agencies must be equipped to investigate and prosecute traffickers effectively, while governments should prioritise policies that address the root causes of vulnerability, such as poverty and inequality.

Additionally, international cooperation is essential to dismantle transnational trafficking networks. By sharing information, coordinating efforts, and extraditing offenders, countries can work together to bring perpetrators to justice and protect victims.

Furthermore, civil society organisations play a vital role in raising awareness, providing support services, and advocating for policy change. By working together, we can disrupt trafficking networks, protect vulnerable populations, and empower survivors to rebuild their lives.

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ASHOKA PSYCHOLOGY REVIEW

Critical Analysis of Multisensory Interactions Regulate Feeding Behavior in Drosophila

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Introduction

In the paper by Oh et al. (2021), the feeding behavior of the model organism, Drosophila melanogaster is explored by highlighting how Drosophila melanogaster relies on multisensory input integration for its decisions around food. Although invertebrates like Drosophila are often studied in neuroscience research for its genetic tractability and well-mapped sensory circuits, studies often focus on discrete sensory channels independently (Scott, 2018). This inadvertently creates a gap in knowledge regarding how these sensory channels interact and help guide real-world feeding decision making. Oh and his colleagues bridge this critical gap by examining how olfactory, gustatory, and mechanosensory cues interact in order to inform feeding. This review aims to critically analyze their findings, methodologies and contributions in the light of previous research.

Sensory Systems Relevant to Feeding in *Drosophila*

The gustatory system detects nutrient quality through gustatory receptor neurons (GRNs) which respond to sugars, amino acids, salts and bitter compounds. It serves as an important checkpoint for food evaluation and acceptance in Drosophila (Scott, 2018). Sweet-sensitive GRNs, also known as taste receptor neurons, are located on the labellum or the legs, and enhance feeding responses when exposed to sugar. On the other hand, bitter and sour foods often lead to suppression of these responses (Scott, 2018). It has also been found that this taste system not only regulates immediate feeding behaviour, but also has the potential to modulate future responses by maintaining experience-dependent changes (Deere & Devineni, 2022).

The olfactory system containing the olfactory receptor neurons (ORNs) are sensory neurons located in the antennae and maxillary palps which are responsible for long-range detection of food sources and volatile odorants in Drosophila melangoaster (Giang et al., 2017). Certain volatile compounds, like ethanol-containing odors, have been found to be preferred by Drosophila (Schneider et al., 2012). This is possibly due to ethanol's caloric value which becomes a high source of energy, but it has also been observed that ethanol-containing food sources are also favored for oviposition sites (Azanchi et al., 2013). Despite such findings, most studies have focused on the olfactory system in Drosophila as a long-range locator, instead of its role in modulation of feeding once food is available (Dweck et al., 2016; Lebreton et al., 2017).

In studies relating to feeding behaviors, the mechanosensory system is often overlooked, but it has shown to play a significant role in detecting food texture and viscosity (Sánchez-Alcañiz et al., 2017). The mechanosensory neurons (MNs) are neurons that are sensitive to touch, pressure and mechanical deformation. They are present in the leg hair plates and also become essential for building food texture discrimination in flies (Zhang et al., 2016). The flies are shown to have optimal feeding on liquids that are of intermediate viscosity (Zhang et al., 2016). A study done by Jeong and his colleagues in 2016 reports how mechanosensory neurons also amplify sweet-tasting signals in flies, which highlights interactions between taste and mechanosensory modality systems.

Methods and Findings of Oh et al. (2021)

The research done in Oh et al.'s (2021) paper furthers this idea of interactions between sensory neurons by using powerful neurogenetic tools to allow us to understand the contributions of distinct sensory modalities to fly feeding. Before delving deeper into the methods and tools utilized by this study, examining why *Drosophila melanogaster* was chosen as the model organism is important to understand. Oh et al. (2021) highlights how fruit flies are a versatile model system to study multisensory integration related to feeding, as it has many similar taste and smell receptors as present in vertebrates. This makes it easier to compare the findings found in flies while being able to study the neuronal and molecular mechanisms underlying feeding behaviour.

Feeding initiation in this paper is assessed using the proboscis extension reflex (PER), which is used as a proxy for food preference. In a PER assay, a sugar solution is applied to a restricted fly's leg while behavioral responses (proboscis extension) are

recorded. The study utilised modified PER assays by introducing yeast odor, which is an ecologically relevant cue for feeding in Drosophila, as yeast-driven volatiles are usually released by the fly's primary food source — fermenting fruit (Becher et al., 2012) . The study uses this by bringing the yeast stimulus close enough to the fly for them to smell the yeast-derived volatile metabolites without contacting the yeast. This helped prevent any taste neuron activation, and only evoked basal levels of PER.

While the flies seemed to show a moderate level response to the sugar stimulus, they showed an enhanced PER response when the same concentration of sucrose was combined with the yeast odour. Importantly, yeast odour alone did not show a strong PER response. This effect vanished when the olfactory organs, either the third antennal segments (located on the head for airborne odorants) or the maxillary palps (located on the fly mouthparts for close range cues), were removed, or when Orco-null mutants, which show an extremely limited range of odor detection, were used. This established that olfactory input, not general arousal, was necessary for this response.

In order to pinpoint which olfactory receptors mediated this effect, the authors focused on Or35a-expressing neurons, which are a subset of olfactory receptor neurons that are known to respond to yeast-derived volatiles. It was discovered that silencing the Or35a expressing neurons had no effect on the fly's normal feeding response to sugar, but instead completely removed the extra boost in feeding that occured when yeast odor was added. This suggests that Or35a is selectively required for odor-dependent enhancement. The authors further tested this by using the CRISPR-Cas9, a gene-editing method that is used to precisely knock-out or modify target genes, to generate flies without the Or35a. A gas-chromatography-mass spectrometry (GC-MS) analysis performed on the yeast suspension revealed that the major odorants were isoamyl alcohol and phenylethyl alcohol. Individually presenting these compounds with sugar emphasised that specific yeast volatiles could mimic the full yeast odor effect. Meanwhile, optogenetic activation of Or35a neurons restored PER enhancement even without actual odor, demonstrating both the necessity and sufficiency of the activation of this receptor subset (Oh et al., 2021).

Additionally, it was found that the yeast odor boosted feeding more when the food was thin and applied to the legs, suggesting that leg touch (mechanosensation) helps amplify the feeding response. This was not observed in the same way in the mouth (labellum). In order to justify this connection between mechanosensory and the olfactory system, the mechanosensory neurons (MNs) of the hair plates were silenced. Hair plates are clusters of short mechanosensory hairs, each supplied by a single sensory neuron. This process of silencing eliminated the yeast odor-evoked PER enhancement. In order to reduce off-target effects that might be a result of silencing, and to ensure precise targeting, the researchers used the Split-GAL4 technique, which restricts expression of single target cells. Split-GAL4 lines were used to isolate small subsets of mechanosensory neurons present on the leg hair plate. Such precision strengthened the conclusion that these specific mechanosensory neurons, and not any other touch sensors, mediate the mechanical signal of moving toward food. It was also uncovered that flies with mutations in mechanosensory transduction channels, *nan, iav, piezo,* lost the odor-enhanced PER These channels are mechanosensitive proteins that convert physical touch or pressure into electrical signals.

Critical Evaluation

The most important aspect of Oh et al.'s (2021) methodology was the tested combinations of sensory cues. Sugar alone gave a moderate PER response, while yeast odor alone gave a weak one, and viscosity alone had no effect on PER response at all. However, when combined, yeast-odor volatile, sucrose substance, and mechanosensory activation produced a supra-additive PER response. This suggests that stimulation from all the modalities simultaneously yielded the highest feeding response, hence providing key evidence for multisensory integration influencing feeding behavior. The loss of function and gain of function are sound and rigorous approaches that showcase the robustness of the study, and the evidence provided supports the raised hypothesis.

However, the study also falls short in a few key ways. Firstly, even after the study identifies peripheral components like ORNs, MNs, and GRNs, no clear model of central neural convergence is offered, leaving a critical explanatory gap in how these signals are integrated to generate a supra-additive response. Another notable weakness lies in the ecological validity of PER assay. In this study, PER is used as a proxy for feeding enhancement in response to sensory cues. While PER is useful for detecting feeding initiation, it does not guarantee that the fly proceeds to actually ingest food, or that this leads to meaningful nutritional intake (Itskov et al., 2014). An alternative approach could include introducing the capillary feeding (CAFE) assay, which quantifies actual intake, and could complement PER data. The CAFE assay mimics a liquid feeding environment by placing flies in a chamber with thin glass capillaries filled with liquid food (e.g., sucrose, yeast extract, or amino acid solutions) (Ja et al., 2007). The amount consumed is precisely measured by tracking the reduction in fluid level over time, corrected for evaporation. It is sensitive enough to track subtle changes in caloric intake, which is crucial for linking behavioral triggers (like PER) to actual physiological outcomes (Ja et al., 2007). The paper also leaves some unresolved questions like how multiple mechanotransduction channels functionally work together in mechanosensory neuron cells. Future research can answer this question and focus on how activation of the coxa hair plate MNs can regulate feeding.

Conclusion

Despite these limitations, this study proved to be a landmark in its novel contributions to the study of multisensory integration in flies. It makes important conceptual paradigm shifts by reframing feeding behavior. The paper also succeeds in demonstrating that *Drosophila melanogaster* is a powerful model for studying multisensory integration, especially due to the availability of neurogenetic tools. The study lays the groundwork for future research clearly, and marks the shift of recent trends in behavioral neuroscience that move away from modular views of sensory processing toward more integrative frameworks.

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ASHOKA PSYCHOLOGY REVIEW

Harassing Hierarchies: How Power Distance Shapes Social Behaviour in India and Australia

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Power Distance

Power Distance Index (PDI) is the degree to which members with less power in a culture accept unequal power distribution (Shi & Wang, 2011, p. 99). This cultural dimension is determined from the perspective of the members with less power and shows how much they endorse the present inequality. The role of power is recognised differently in high power distance (high PD) and low power distance (low PD) societies. In the former, it is seen as a source of stability, harmony and order in the society; in the latter, it is thought to breed corruption and oppression (House et al., 2004, p. 536). They are also differentiated in the amount of social mobility possible—in high PD societies, social mobility is limited compared to low PD societies.

Workplace Bullying

Workplace bullying consists of ongoing, repeated acts of hostility by one or more individuals toward a target who cannot defend themselves through normal conflict resolution. It typically involves negative behaviours occurring at least weekly over six months or more, and can lead to serious health issues and diminished job performance for those affected (Zapf, 1999; Einarsen, 2000; Moayed et al., 2006). It is an umbrella term, and may include a broad and varied range of enacted interpersonal negative behaviours in the workplace (e.g, bullying, mobbing, incivility, exclusion/ostracism, discrimination, harassment, psychological aggression, victimisation etc.). Bullying depends on an imbalance of power between the aggressor and the victim. In environments where power is distributed very unevenly—reflected in high power distance—these imbalances are magnified, making workplace bullying more likely to occur.

Previous Studies

Rai and Agarwal (2017) found that 44% of Indian managers met behavioural experience criteria for workplace bullying (weekly or daily negative acts), with 8.7% self-identifying as victims. These rates exceed those reported in studies conducted in low power distance cultures such as Europe (e.g., Salin, 2003).

Ahmad et al. (2021) compared Australian employees (PDI ≈ 36) with their Pakistani peers (PDI ≈ 55)—a cultural profile comparable to India's due to similar power distance—and found that Pakistanis reported a significantly higher frequency of bullying (M = 1.81, SD = 0.67) than Australians (M = 1.56, SD = 0.62) (Ahmad et al., 2021, p. 37).

The existing literature demonstrates that workplace bullying is more prevalent in high PD cultures. We may deduce that workplace bullying, especially when directed downward, is both more prevalent and more tolerated in high power-distance societies. Because employees in these cultures are socialised to show deference to authority, they may view bullying as less of a norm violation and have fewer opportunities to push back. Even when subordinates recognise the behaviour as unjust, strong power-distance norms might leave them with little ability to challenge or escape it. Hence, the cultural group or nation may moderate the relationship between power distance and the prevalence of workplace aggression.

Purpose and Explanation

Rationale

Building on present evidence that higher power distance contexts exhibit greater workplace bullying, this paper looks at how the power distance index relates to workplace bullying prevalence in India (PDI ≈ 77) compared to Australia (PDI ≈ 36) (Hofstede, 2001). Studying the link between PD and workplace bullying in India is crucial for two reasons: higher prevalence and dissimilar presentations, compared to overstudied Western populations.

Firstly, workplace bullying is quite common in India, and the sparse literature reflects this—D'Cruz and Rayner (2012) reported that in the ITES-BPO sector, 44.3% of employees reported experiencing bullying to some degree, and 42.3% "often" or "very often".

Workplace bullying inflicts severe emotional and physical harm on the victims, undermining their mental health and performance (D'Cruz et al., 2016). Secondly, most research on bullying stems from low PD Western settings. These findings cannot be directly applied to the Indian context because workplace bullying also manifests differently depending on the cultural context. D'Cruz et al. (2016) found that in India, 85% of victims point to superiors as the main source of bullying, whereas Australian respondents cite both superiors (58%) and peers (44%) as sources of mistreatment. Karatuna et al. (2020) concur in their cross-cultural review of the nursing sector—high PD clusters (eg. Southern Asia, Latin America, Middle East) are dominated by vertical bullying from superiors, compared to lower PD clusters (eg. Latin Europe, Anglo countries) which see horizontal, peer-to-peer bullying.

Understanding the Group Differences

Power is perceived differently in high and low PD cultures. In a high PD culture like India, it is seen as a source of order, and thus, sharp inequalities in power and authority are legitimised in the workplace. As discussed before, this, however, may increase the prevalence of workplace bullying, especially from superiors (vertical bullying). Workers are socialised to defer unquestioningly to bosses, so negative acts by those in power might often go unchallenged, blending into routine management behaviour, and downward aggression becomes normalised. This dynamic helps explain why Rai and Agarwal (2017) found a notable difference in participants who met behavioural criteria for frequent bullying (44%) and those who labelled themselves victims (8.7%)—many simply accept these acts as part of the job. D'Cruz et al. (2016) further report that Indian workplaces often lack grievance procedures, illustrating the lack of recognition of bullying's harms. Thus, when dominant norms excuse mistreatment, those in power feel free to abuse authority, knowing subordinates lack the cultural or procedural means to resist. Contrastingly, low PD cultures like Australia view bullying as a clear norm violation, seeing power as coercive, prompting stronger opposition.

Conclusion

Ultimately, this paper posits that India's high PD culture amplifies both the prevalence and downward nature of workplace bullying compared to Australia's low PD culture. In India, superiors are more likely to bully subordinates because with greater, more accepted power inequalities, victims have less capacity to resist, creating a self-reinforcing cycle of unchecked workplace aggression in high PD contexts.

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Lab Reviews

Through Lab Reviews, we hope to critically analyse papers that were synthesized in University labs: within or outside Ashoka.

Ashoka Psychology Review, 2025, 27-29

Lab Review

ASHOKA PSYCHOLOGY REVIEW: LAB REVIEWS

Understanding Group Mental Health Through Multi-Brain Neuroimaging: A Review

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Original Paper: Ray, D., Roy, D., Sindhu, B., Sharan, P., & Banerjee, A. (2017). Neural Substrate of Group Mental Health: Insights from Multi-Brain Reference Frame in Functional Neuroimaging. Frontiers in Psychology, 8, 1627. https://doi.org/10.3389/fpsyg.2017.01627

Introduction

Most clinical diagnoses and interventions still revolve around the individual, and their thoughts, neurotransmitters, as well as symptoms. However, this paradigm fails to adequately account for the apparent reality that mental illnesses develop in interpersonal connections, including friendships, families, romantic relationships, and educational settings. For example, paranoia needs an "other" to mistrust; social anxiety depends on the fear of being evaluated; and autism spectrum disorder involves differences in social reciprocity.

Ray et al. (2017) argue that by focusing solely on isolated brains, we are overlooking something important. With new technologies, it is now possible to examine how two brains interact in real time. This is a method often referred to as hyperscanning. The authors propose that measuring the degree of coupling between brains (e.g., correlation, coherence) can help us understand social functioning in mental illness with a level of objectivity previously impossible.

This study is a philosophical and methodological paper rather than a single experiment. It examines current hyperscanning methods and makes recommendations for their use in mental health studies.

Hypothesis

The authors suggest that inter-brain connection may be a neurological indicator of interpersonal functioning, providing information about mental health at the group level. They hypothesise that individuals with strong emotional or cognitive understanding of one another will have greater brain synchronisation, whereas social functioning disturbances (such as those associated with ASD or borderline personality disorder) may manifest as decreased synchrony.

Methods

Since the paper is a theoretical article rather than a controlled lab experiment, the approaches include reviewing the technology and analytical tools that enable multi-brain investigations. Among them are:

Hyperscanning Setups

Dual-scanner or internet-linked fMRI. In this configuration, two subjects are scanned concurrently in different MRI machines. They are linked via an internet interface, enabling real-time interaction while researchers capture synchronised brain activity.

Single-scanner dual-head coil fMRI. This technique supports more realistic interpersonal contact during data collection by allowing participants to be scanned jointly while positioned face-to-face. It is done using a dual-head coil inside a single MRI machine.

EEG and fNIRS hyperscanning. More portable hyperscanning options include electroencephalography (EEG) and functional near-infrared spectroscopy (fNIRS), where two people wear different but connected recording devices. Researchers can monitor simultaneous brain activity during joint tasks with these systems.

MEG hyperscanning. Hyperscanning can also be done using magnetoencephalography (MEG), usually with participants positioned in different scanners. This method has been used in situations like researching mother-infant relations in real time.

Inter-Brain Metrics

The authors describe a number of analytical methods for measuring neural connection between people that have been modified from single-brain connectivity studies. In naturalistic paradigms like storytelling or watching films, inter-subject correlation (ISC), which evaluates the similarity between two participants' brain time courses, is very helpful. By measuring time-frequency coherence between brains, wavelet transform coherence (WTC) enables researchers to identify fleeting synchronisation patterns. The phase locking value (PLV) measures how much a participant's brain

oscillations synchronise.

Granger causality and partly directed coherence, which help determine if one person's brain activity predicts or leads another, can be used to investigate directional influences within dyads. By identifying nonlinear causal linkages between brains, transfer entropy expands on this methodology.Lastly, the study of group-level synchrony is made possible by graph-theoretical metrics, which conceptualise several participants as nodes within a wider interpersonal network.

Results

Since the article is a theoretical review, the results are conceptual rather than numerical. The authors synthesise prior research to show that neural synchrony reliably indexes successful communication. Research shows that when a speaker and listener comprehend each other, there is a correlation between their brain activity (Stephens et al., 2010). Similar shared brain dynamics are produced by emotional interactions, as demonstrated by hyperscanning studies involving romantic partners.

Changes in inter-brain connectivity in psychiatric populations are also highlighted in the review. People with borderline personality disorder frequently display disruptions in collaboration, while autistic dyads frequently demonstrate decreased synchronisation in social-processing regions. This suggests that interpersonal neuronal alignment is disturbed. The authors come to the overall conclusion that synchronisation is a significant indicator of interpersonal functioning in a variety of settings.

Discussion

According to Ray et al. (2017), multi-brain imaging may provide fresh perspectives in a number of therapeutic domains. Hyperscanning can be used to map how depression impacts common social behaviours, such as eye contact, emotional reactivity, and conversational flow. Additionally, it could be used to track improvements while receiving therapy.

Reduced brain connection in joint attention and child-caregiver tasks has already been noted in autism spectrum disorder (ASD). These patterns may eventually help with early diagnosis, according to the authors. Another topic of interest is schizophrenia, as many of its symptoms include uncertainty regarding the motivations of others. These challenges may be clarified by measuring how patients' brains match with others during social tasks.

Personality disorders are also covered by the writers. Different relational patterns are associated with avoidant, narcissistic, and borderline personality disorders. Inter-brain synchronisation may be able to identify these tendencies or provide more individualised treatment. People with social anxiety disorder frequently misinterpret social cues, which presents a different puzzle. During social evaluation, hyperscanning may reveal whether they have anomalous or mismatched neural connection.

The study also highlights conditions like eating disorders, somatic symptom disorder, and sexual dysfunction where connections are crucial. Feedback loops with partners, family, or colleagues are frequently a feature of these diseases. Studying these dynamics may be made simpler by neural synchronisation. Additionally, synchronisation and suicide risk are linked by the authors. A feeling of "thwarted belongingness" is crucial, according to the interpersonal theory of suicide. Interpersonal separation may be indicated by low synchronisation with close friends and family.

One of the most promising applications is the therapeutic alliance.The ability of a client and therapist to "tune in" to one another may be objectively evaluated using hyperscanning. Self-report is typically used to measure this.

Additionally, the study presents a more comprehensive theoretical argument. Group or relational mental states may have a biological basis if mental processes between individuals can be monitored at the brain level. This calls into question the notion that the mind is limited to a single brain. Rather, Ray et al. (2017) contend that interpersonal space has psychological significance and is quantifiable in and of itself.

Limitations

The authors point out a number of shortcomings in the present state of hyperscanning research. Since the field is still in its infancy, the majority of research uses small, exploratory samples. In addition to being costly and technically challenging, hyperscanning systems can produce false interactions when contrasted to actual social settings. Furthermore, some of the observed coupling may be explained by shared inputs or task structure because inter-brain synchrony is correlational. Lastly, there are ethical issues in measuring interpersonal dynamics at the neurological level, especially with reference to patient-therapist boundaries and privacy.

Conclusion

Thus, a paradigm shift in mental health research is introduced by Ray et al. (2017), who look at how several brains interact rather than just individual brains. According to their review, interpersonal synchronisation is a measured brain phenomena with actual clinical significance, not just a metaphor.

If further research confirms these theories, inter-brain connection may aid medical professionals in comprehending not just what is going on inside a patient but also what is going on between the patient and those who are important to them. Mental health research is considerably more in line with how individuals actually live in relationships thanks to this human-centered viewpoint.

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Ashoka Psychology Review, 2025, 30-34

Lab Review

ASHOKA PSYCHOLOGY REVIEW: LAB REVIEWS

Developing a Recovery-Focused Therapy for Older People with Bipolar Disorder: A Qualitative Focus Group Study: A Review

Arushi Ghosh, Fern, and Priyanshi Agarwal

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Original Paper: Tyler, E., Lobban, F., Long, R., & Jones, S. H. (2021). Developing a recovery-focused therapy for older people with bipolar disorder: a qualitative focus group study. BMJ Open, 11(8), Article e049829.

Bipolar disorder (BD) is characterised as a lifelong mood disorder that prevails across different phases of one's life. While a robust body of research has assessed the clinical presentation and treatment of BD in younger and working-age adults, comparatively limited focus has been placed on people living with this disorder in the later phases of their life . As populations age globally and diagnostic awareness improves, a growing proportion of people with BD are now entering older adulthood. Regardless of this demographic shift, psychological interventions for BD have predominantly remained age-general, with little consideration of how ageing-related changes may shape therapeutic needs and experiences.

Bipolar disorder in older adults is often characterized by a combination of long-term mood instability, age-related physical and cognitive disabilities, and a gradual build-up of psychosocial stressors. Research also indicates that BD in older people is often linked to recurrent depressive episodes. These factors in combination have a substantial effect on daily functioning, quality of life, and engagement with treatment. Nonetheless, clinical guidelines often recommend that older adults receive the same therapeutic interventions as younger people, in spite of rising evidence that older populations differ in how they conceptualise illness, recovery, and therapeutic goals.

In this context, Tyler et al. (2021) address a notable gap in the literature by exploring how recovery-focused therapy (RfT) might be adapted for older adults with BD. Recovery-focused approaches emphasise personal meaning, autonomy, hope, and engagement in valued life activities rather than symptom remission alone. Such approaches have demonstrated promise in younger populations, however little was previously known about their relevance or acceptability for individuals in later life, particularly given that older adults may hold different understandings of "recovery" shaped by long-term illnesses and ageing.

The researchers of this study adopt a more participatory approach, rather than aligning to a predefined therapeutic model, prioritising the voices of older adults with lived experience of BD, alongside friends and carers. The study's aim is to explore experiences of living with BD in the later stages of life, attitudes toward recovery, and perspectives on how an existing RfT manual might require adaptation. This qualitative approach focuses on a more humane understanding of ageing with BD, while grounding intervention development in service-user priorities. The present review summarises and evaluates the methodological approach used in this study, highlighting its contribution to age-sensitive psychological research in bipolar disorder.

Methodology

Tyler et al. (2021) placed the design of their study within a broader framework of intervention development, integrating recommendations that qualitative research be used in the early stages of designing and refining psychological interventions. Focus groups were selected to promote participant interaction, encouraging shared reflection and the identification of collective themes, while allowing the researchers to guide discussion without dominating it. The study adhered to established guidelines for reporting qualitative research, strengthening its transparency and credibility.

8 participants took part across 3 focus groups, which included 6 older adults with lived experience of BD, one carer, and one friend. Participants were recruited from a confidential research database and were required to be aged 60 years or older, capable of providing informed consent, and sufficiently proficient English. The small sample size is a limitation of the study as it's not representative of all older people with BD, since they were all white and all had (or had retired from) some form of professional experience. However, the inclusion of carers and friends expanded the range of perspectives and added relational context to participants' accounts, improving the ecological validity of the findings.

The focus groups were conducted at a university in the North West of England and lasted approximately 90 minutes each. While all participants were invited to attend each session, attendance varied based on availability. The first group was co-facilitated by a service-user researcher and lead researcher, while the remaining groups were facilitated by the lead researcher alone. All sessions were audio-recorded, transcribed verbatim, and conducted following written informed consent.

A semi-structured topic guide was used to organise discussions across sessions, covering BD experiences, conceptualisations of recovery, therapeutic needs, and potential adaptations to RfT. Topics were distributed across the first two focus groups, with the third session revisiting all areas to allow for elaboration and clarification. This progressive design enhanced the depth and coherence of the data and ensured that all participants had opportunities to contribute meaningfully.

The data was analysed using framework analysis, a structured yet flexible approach that combines deductive and inductive coding. Multiple members of the research team were involved in coding and framework development, which helped reduce individual bias and strengthen analytic validity. The researchers explicitly acknowledged reflexivity, recognising their prior involvement in recovery-focused therapy research and actively working to ensure that participant perspectives guided interpretation. The role of potential bias was also highlighted to ensure that the results collected and interpreted were a true reflection of the participants' ideas rather than selected responses being based on the personal views of the research team. This transparency added credibility to the analytical process and reinforced the study's commitment to genuinely incorporating service-user voices.

Results

Participants

Although all participants were invited to attend each focus group, attendance varied due to personal commitments, and flexibility was required to accommodate availability. Eight participants took part across three focus groups, attending between one and three sessions. The sample included six individuals with lived experience of bipolar disorder, one carer, and one friend who also had a diagnosis of bipolar disorder and identified herself as being in later life. Participants with lived experience were aged between 67 and 77 years (M = 72), with time since diagnosis ranging from 8 to 38 years (M = 20).

Overview of Themes

The focus groups generated rich accounts of how participants perceived changes associated with later life. After coding the first focus group, the research team agreed that the initial framework required revision to better reflect the data. Using a combination of inductive and deductive analysis, the original topic of "living with bipolar disorder in later life" was expanded into three themes: health-related and age-related changes in later life, experience of bipolar disorder in later life, and managing and coping with bipolar disorder in later life. Topics relating to relationships with relatives and health professionals were incorporated as subthemes within managing and coping. Additional themes addressing recovery, future help-seeking, and adaptation of recovery-focused therapy were retained following a deductive approach.

Theme 1: Health-Related and Age-Related Changes in Later Life

Participants described a range of physical, cognitive, and behavioural changes in later life. Physical difficulties included arthritis, back problems, and hearing loss, while cognitive changes involved reduced memory, poorer concentration, and increased distractibility. Several participants also described no longer engaging in activities they had previously enjoyed, which was often accompanied by frustration and sadness.

A recurring issue was uncertainty about how to interpret these changes.Participants frequently questioned whether difficulties with memory and concentration were part of normal aging or related to bipolar disorder. This was complicated by mood fluctuations, as many participants reported that memory problems worsened during low mood but appeared to improve when mood was elevated.

Changes in family, work, and social structure were also reported. Retirement, bereavement, and reduced social contact meant that many participants had more time alone, which for some led to loneliness. Having time to reflect on past events, particularly those linked to behaviour during mood episodes, often resulted in feelings of guilt, shame, and regret that remained emotionally salient. For others, however, reduced work-related pressure was viewed positively, with some participants feeling that the absence of occupational stress helped stabilize their mood.

Theme 2: Experience of Bipolar Disorder in Later Life

All participants described a lifelong experience of mood instability. While many felt that the nature of their bipolar disorder had changed over time, the direction of change varied. Some participants felt they experienced fewer episodes in later life, while others reported more frequent episodes that were shorter or less intense. Across the group, there was a shared perception that depressive symptoms were now more prominent than periods of elevated mood.

Manic episodes were often described as less physically intense than earlier in life and more characterised by cognitive disturbance. Long-term experiences of bipolar disorder were also associated with stigma and changes in social networks. Some participants described a loss of confidence and a weakened sense of identity, linked to both ageing and the cumulative impact of repeated episodes. Others reported maintaining a strong sense of identity through voluntary work or regular social engagement, suggesting that having a role, purpose, and social connection supported resilience in later life.

Theme 3: Managing and Coping with Bipolar Disorder in Later Life

Participants described using a range of strategies to manage bipolar disorder, including medication, psychological therapies, and self-management approaches. Most participants felt medication had helped stabilise their mood, although concerns were raised about its

long-term effects on memory and concentration. Some participants reported positive experiences of medication reduction in later life, particularly when they felt they had previously been overmedicated.

Experiences of psychological therapy varied. While many participants had engaged with therapy, some questioned whether psychological approaches would feel acceptable to older adults with bipolar disorder. Over time, several participants felt they had learned to manage their condition more effectively through lived experience, reading, and recognising personal triggers. Supportive relationships with professionals, particularly those that involved trust and shared responsibility, were described as helpful, although some participants expressed ongoing frustration with services and a sense of being underestimated. Day-to-day coping often involved distraction throughactivities such as gardening or voluntary work. While these strategies were helpful in the short term, participants noted that distraction was less effective when activities required little concentration. Support from family and friends was described as important, particularly in identifying early warning signs, although experiences varied across individuals.

Theme 4: Experience of Recovery in Later Life

Participants expressed differing views about recovery in later life. Some questioned whether recovery was an appropriate term, associating it with cure or the complete absence of symptoms, which they felt was unrealistic for bipolar disorder. These participants aligned more closely with a clinical understanding of recovery and expressed uncertainty about the possibility of meaningful recovery. Other participants described recovery in more personal terms, distinguishing it from clinical recovery. For them, recovery involved engaging in meaningful activities, setting goals, and maintaining hope, even in the presence of ongoing symptoms. Some participants viewed their lived experience as a source of knowledge that could benefit others, while others found it harder to see opportunities for growth due to perceived age-related limitations.

Theme 5: Seeking Help in the Future

Most participants had prior experience of psychological therapies and were broadly positive about future support tailored to older adults with bipolar disorder. They emphasised the importance of therapists who listened carefully, showed empathy, and recognised the individual's life experience. Time to build trust within the therapeutic relationship was seen as essential, as was addressing confidence, assertiveness, and self-worth, alongside challenging age-related stigma.

Theme 6: Adapting Recovery-Focused Therapy for Older People

Participants supported adapting recovery-focused therapy for older adults and suggested practical changes to accommodate age-related difficulties. These included repetition, written summaries, and revisiting material across sessions to support memory. The use of visual or audio materials was also suggested. Clear and simple language and accessible materials were emphasised. Views differed regarding therapy duration, with some favouring shorter interventions and others preferring longer-term input with booster sessions.

Discussion

Tyler et al. (2021) is the first study to involve older adults with bipolar disorder in framing clinical processes and interventions, making the findings of the study highly valuable. The generalizability of the paper's findings were aided greatly by the fact that the group studied showed similar problems to older adults with BD (changes in cognition and physical ailments), as well as older adults in general (losses, loneliness, isolation). However, this specific group faced a challenge of its own: having more time on their hands later in life, which led to intense rumination and subsequent guilt and shame.

Further, some participants reported having lower mood and milder episodes of mania. Specifically, the researchers suggest that depressive symptoms may not be specific to ageing, highlighting the need to look at such symptoms in older adults with bipolar disorder. Participants also understood the term "recovery" as helpful in describing their journey or not based on whether they saw it as a clinical or personal concept. The researchers compare this study to other findings that older adults do not aim for a renewed sense of self, but those who managed their difficulties were likely to describe themselves having recovered their sense of self; the current paper supports this, as people who held positive views about their recovery and who engaged in meaningful activities reported having an intact self-identity.

Overall, the group was optimistic of developing a new therapeutic intervention for their population. While one participant expressed concern about how other older adults would perceive it, past research has shown that older adults with depression are favorable towards psychotherapy and prefer it over pharmacotherapy. These findings, however, may be hard to generalize, especially considering that in this paper, participants reported facing stigma from mental health professionals.

Implications

The researchers have used their findings to create recommendations for clinical practice. For instance, the participants looked at personal growth — such as building assertiveness, confidence, and competence — as therapeutic targets, which have been shown to be helpful targets for personal recovery, and hence the findings could be used in implementing interventions. These interventions were in line with guidelines for working with older adults, and were based on what the group thought would be helpful in RfT for older people. Thus, the aforementioned importance given to personal growth was recommended to be combined with "wisdom", which emerged from the participants' stress on the need to be valued and respected for their survival.

The recommendations widely include examining the client's stance on recovery, helping in symptom management with an enhanced awareness of the struggles faced by those with BD, extending session lengths, using strategies for memory retention, using multimedia and clear language to increase accessibility, the use of booster sessions, emphasis on the therapeutic relationship (both therapist values and respect for the client's wisdom), and focus on strengths and resilience in therapy.

Strengths and Limitations

The study's main strengths stem from the involvement of the older adult bipolar community, and the researchers' ability to identify and address the concerns while developing recommendations. However, the study self-reports its primary limitation: that conclusions may not be generalizable to all populations, as participants were small in number and self-diagnosed, were mostly Caucasian, British, and from one geographical location, came from a professional background, and were actively interested in the study. Further, its reliance on self-report brings in the biases of subjective experience and recall bias. Lastly, the researchers may have tried their best to not let their own biases seep into analysis, but it is possible that certain themes or concerns may have been overshadowed. Thus, while the study can promise many helpful interventions, they may not benefit the entire population, making it important for the recommendations to be implemented alongside apt training of therapists who work with this population, so that they are able to wisely judge how to conduct therapy sessions. The study also provides a guide to the concerns faced by the studied population, opening the field to further research into these themes.

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Lab Review

ASHOKA PSYCHOLOGY REVIEW: LAB REVIEWS

Sounds of melody—Pitch patterns of speech in autism: A Review

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Original Paper: Sharda, M., Subhadra, T. P., Sahay, S., Nagaraja, C., Singh, L., Mishra, R., Sen, A., Singhal, N., Erickson, D., & Singh, N. C. (2010). Sounds of melody—Pitch patterns of speech in autism. Neuroscience Letters, 478(1), 42–45. https://doi.org/10.1016/j.neulet.2010.04.066

Introduction

'*Sounds of melody—Pitch patterns of speech in autism*,' by Sharda et al. (2010), along with Prof. Nadini C. Singh as a corresponding author, investigates how intonational and prosodic features of spoken language differ between children with Autism Spectrum Disorder (ASD) and typically developing age-matches. Prosody, which refers to the affective, syntactic and pragmatic function of speech, forms the foundation of communication through conveyance of emphasis and emotion. Although atypical prosody is not uncommon in ASD, systematic acoustic characterization through measures like mean voice pitch, pitch range, intensity, speaking rate, pause duration, and intonation contours, has been limited. The speech analysis was conducted on 33 participants in total (15 children with ASD aged 4-10, 10 age-matched typically developing peers as controls or TD, and an independent group of 8 mothers of typical infants or MOT) , with which Sharda et al. aimed to identify a pattern of vocalization in children with ASD. *This review will cover the details of this study, critically analyse them, and discuss possible implications as well.*

Methodology

Based on previous research by Peppe et al. (2007) as well as DSM criteria, Sharda's team hypothesised that the ASD group may show significant delay in their manner of verbal communication. To operationalise this, they analysed pitch measures, pitch range and pitch excursions in particular using analytical softwares like Praat. Essentially, pitch measures included fundamental aspects like the mean, maximum and mean, whereas the pitch range calculated the difference between maximum and minimum pitch values in Hertz for the quantification of pitch alteration dynamics. Lastly, pitch excursion refers to the extent of pitch changes analysed on the basis of 'semitones', which describes relative difference between two consecutive pitches.

Participant sampling involved recruitment from psychiatric facilities that diagnosed the AUT group on the basis of DSM-IV criteria as well as Childhood Autism Rating Scale (CARS). Considering the year of this study's publication, the DSM version was appropriate. Furthermore, CARS is highly reliable with a Cronbach's alpha score of 0.90, which strengthens the study design (Moon et al., 2019). However, the method of recruitment for the other two groups remains unspecified. The inclusion criteria was quite precise, as the AUT participants' verbal capabilities had to be verified through psychological assessments by clinicians, must be acquainted with at least 20 words, and must display minimum two minutes of vocalisations during active speech conditions. All participants were bilingual, which contributed to the standardisation of possible extraneous variables as well. Although gender disparity was evident in the AUT group (14 males, 1 female), a similar ratio was maintained in the TD group followed by adequate justification backed by previous literature on the frequency of ASD in males.

The study design was quite straightforward and involved a singular speech task and a preparatory task before it. In the latter, both neurotypical and autistic children were shown twenty objects on a computer screen and asked to name them. The actual task required them to spontaneously answer simple, open questions based on those objects. The content of their utterances did not matter, as the quality of their speech was the aspect being prioritised. Meanwhile, the MOT group interacted with their respective infants and described the objects to them. The audio samples from these three participant groups were extracted carefully with proper equipment like noise cancelling microphones, which significantly controlled for extraneous disturbances. For analysis, the duration of audio extracts from TD and MOT groups were adjusted as per that of the AUT group. Furthermore, these recordings were converted into a digital format and enhanced for proper speech analysis by tweaking its sampling rate. For acoustic measurements, these samples were cut into segments based on pauses lasting for a maximum of 0.3 seconds. This form of chunking was done to specifically test for pitch excursion and it was necessary for making the sample

acoustically continuous. Overall, the sampling methods and the procedure of data collection mostly portray a satisfactory and well-planned study design.

Results

The results procured were quite insightful and led to significant inferences.

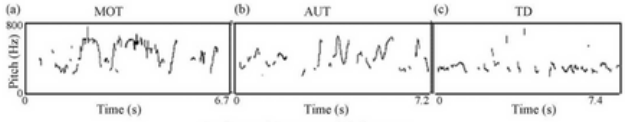

Fig. 1. (a–c) Fundamental frequency contours.

Fig. 1 represents frequency contours, or a visualisation of pitch changes over time. The graphs for MOT and AUT display a similar range of fluctuations in frequency, which appear quite different from the TD group. This indicates an expansion of prosodic features and hence, visible usage of intonations associated with motherese.

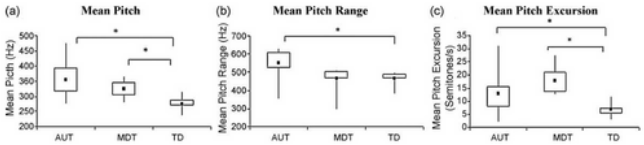

Fig. 2. (a–c) Box plots of mean pitch, pitch range and pitch excursion.

In addition, further acoustic analysis helped form box plots for the three aforementioned pitch parameters with regards to the three participant conditions. Firstly, a post-hoc test named Student-Neuman-Keuls test for multiple between-groups comparisons suggested significant differences between the AUT and TD groups ($p<0.001$) as well as between MOT and TD groups ($p=0.028$). However, the lack of difference between the AUT and MOD groups ($p=0.157$) compliments the frequency contours and implies speech similarities between autistic children and mothers speaking in motherese. Secondly, the pitch range (Fig. 2b) showed evident variations between the AUT and TD groups, but none between AUT and MOD ($p>0.05$). Lastly, the pitch excursion analysis in Fig. 2c also indicated similar patterns of significance, with AUT and MOT groups having higher semitones per second rates than the TD group.

The study effectively connects their inferences to existing research. For instance, pitch and age have an inverse relationship in typically developing children aged 0-5, which can explain the low pitch means in the data. Therefore, persisting high pitches in autistic children have been deduced as an indicator of delayed speech trajectory. The importance of motherese in establishing an enhanced mode of communication has also been underscored. Motherese is characterised by expressive gestures and higher intonations, which can possibly cater to better engagement with language for growing children especially with ASD. What makes this study crucial is the identification of highly distinct speech patterns in autistic children and the relevance of motherese speech in this context; therefore, these findings deserve appropriate acknowledgement.

Implications

The study helps expand our knowledge and understanding on speech patterns in vocalizations of children with Autism Spectrum Disorder. A study by Asghari et al. (2021) supports these findings and can further justify how these results can help in identifying and characterizing ASD based on speech analysis, using prosodic features as quantifiable biomarkers to supplement behavioural assessments, and inform clinical interventions to support communication development. Research by Holbrook and Israelsen (2020) shows how evidence-based interventions that target speech prosody can help improve expressive speech in persons with ASD which elucidates how prosodic characterization is not just descriptive, and can play a pivotal role in speech support therapies. Moreover, since prosody, which essentially means the manner of speaking, is critical for successful social interaction, atypical patterns of prosody have potential implications on the social competence of persons with ASD. Thus, further research in the field can focus on decoding the neural mechanisms of emotional prosody and how underlying neurolinguistic mechanisms, and atypicalities, in speech production control pathways can play a role in the delayed development trajectory characteristic of ASD. Research by Patel et al. (2019) shows how people with ASD and even some first degree relatives, exhibit altered pitch feedback responses suggesting that prosodic development might not just be through learned language and behavior, but through genetic and neural elements. Lastly, a study by Wang et al. (2022) investigated how pitch-processing mechanisms are shared across domains (language, music, environmental sounds) in autism spectrum disorder, providing theoretical implications that improvement in language and prosody can be brought about by musical interventions. Therefore further studies can explore how music and melodic structures can be used to enhance communicative skills, and aid verbal development and prosodic processing in autism. A point of caution and limitation to the study is the vast heterogeneity within ASD that limits the generalization and consequently applications of these findings. Heterogeneity in etiology, phenotype, and outcome, are all characteristics of ASD contributing to clinical variety that manifests as diverse deficits or impairments in behavioral features and communicative functioning (Masi et al. 2017). This complicates the quest for personalized medicine and limits application of treatment, intervention, or support in autism.

Conclusion

Sharda et al.'s study examines how children with ASD and typical developing controls differ in their use of prosodic features in spoken language. Through analysis of acoustic measures such as voice pitch, pitch range intensity etc. the researchers found the first empirical evidence of a distinct pattern of vocalization in children with ASD through a simple speech-eliciting task. Several age-related characteristics like mean pitch and mean pitch range, which decrease as a function of age, were significantly higher for children with ASD as compared to their peers, and were also a distinctive characteristic of child-directed speech or '*motherese*'. The results suggest that these features might follow a delayed developmental trajectory. While preliminary, and limited by the heterogeneity of Autism Spectrum Disorder, these findings of exaggerated prosodic features, open avenues for further research, in the role of motherese in early language development, neural or genetic basis of pitch-processing and its relation to social communication, and effect of

melodic structures on verbal prosodic-processing, to develop informed and easy-to-implement interventions that could facilitate verbal development in autism.

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Lab Review

ASHOKA PSYCHOLOGY REVIEW: LAB REVIEWS

The ATTUNE Project: A Review

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Original Paper: Batool, S. (2024, September). ATTUNE Project: Transforming Adolescent Mental Health Through Creativity and Science. National Institute for Health and Care Research Applied Research Collaboration Oxford and Thames Valley. https://www.arc-oxtv.nihr.ac.uk/blog/attune-project-art-science-mental-health-youth

Adolescent Mental Health as a Global Research Priority

Adolescence represents a sensitive developmental window for mental health, with nearly half of all lifetime mental disorders emerging before the age of 14 (WHO, 2020). Globally, an estimated 10-20% of children and adolescents experience a diagnosable mental health condition, with early-life psychopathology strongly predicting adverse outcomes in adulthood (Kieling et al., 2011). This period is marked by rapid neurobiological, cognitive, social, and emotional development, during which environmental inputs exert a disproportionate influence on long-term functioning (Blakemore, 2014; Patton et al., 2016). Consequently, mental health challenges such as depression, anxiety, substance use, and suicidality constitute leading causes of morbidity and mortality among adolescents worldwide.

Recent evidence indicates a sustained decline in adolescent mental health across many countries, particularly following the COVID-19 pandemic (McGorry et al., 2024). In high-income contexts, emerging risk factors including digital harms, vaping, obesity, and exposure to psychoactive substances have reshaped the landscape of adolescent risk-taking and psychosocial vulnerability (Mytton et al., 2024). At the same time, adolescents in low- and middle-income countries (LMICs) face compounded risks due to poverty, conflict, and systemic inequities, alongside limited access to mental health care. Given that adolescents constitute nearly half the population in many LMICs, adolescent mental health remains a critically under-addressed global health priority (Kieling et al., 2011).

The ATTUNE Research Programme

The ATTUNE project emerges from a broader research programme situated within global and community mental health, with a particular focus on adolescence and adverse childhood experiences (ACEs). The ATTUNE Project started as a collaboration between CHIMES (Child & Adolescent Mental Health, Imaging, and Ethics) research group within Oxford's Department of Psychiatry and Centre for Arts and Health at Falmouth University; funded by UK Research and Innovation (UKRI). Further, the project involves a partnership of eight universities, including Kent, Leeds, QMUL, KCL, UCL, and Greenwich. They adopt an ecological and trauma-informed framework, drawing on Bronfenbrenner's ecological systems theory and WHO recommendations that emphasise psychosocial, non-pharmacological interventions wherever feasible. The objective is to explore the lived experiences of adolescents (aged 10–24) through creative methods like animation, film, and serious games to improve prevention and care interventions.

Central to the ATTUNE programme is the proposition that culturally grounded, community-based, and participatory interventions can mitigate the mental health impacts of ACEs during adolescence. Rather than conceptualising adolescents as passive recipients of care, the lab's work positions them as active agents in meaning-making and recovery. The programme prioritises early identification of distress, contextualised intervention design, capacity-building within communities, and sustainability beyond the lifespan of individual projects (Attune, n.d.).

A distinctive feature of the ATTUNE research agenda is its emphasis on creative and expressive modalities, such as dance, visual arts, and digital storytelling, as both therapeutic tools and epistemic resources. These methods are theorised to facilitate emotional expression, social connection, and reflective processing in ways that are accessible to adolescents with diverse cognitive and linguistic profiles.

Empirical Contributions and Outputs

The ATTUNE lab has made several notable contributions to the

scientific literature on adolescent mental health interventions. Empirically, the programme has demonstrated that creative, collaborative approaches can function as effective trauma-informed practices, particularly for adolescents exposed to chronic adversity.

For instance, Pethybridge and Smith (2024) provide evidence that community dance interventions can promote emotional regulation, embodiment, and social cohesion among trauma-exposed youth. Bhui et al. (2022) show that creative arts and digital interventions can support recovery from ACEs by fostering narrative agency and reducing stigma associated with mental illness. Complementing these outcome-focused studies, Butcher et al. (2023) outline a structured protocol for implementing participatory, creative interventions within community settings, contributing methodological clarity to a field often criticised for heterogeneity and lack of replicability.

Methodologically, the research programme is characterised by iterative, participatory design. Facilitators actively incorporate feedback from adolescent participants, allowing interventions to be adapted in real time to local needs and constraints (Batool, 2024). This reflexive approach strengthens ecological validity and aligns with ethical commitments to co-production in mental health research.

Collectively, these contributions have helped shift the discourse around adolescent mental health interventions away from purely individualised, clinic-based models toward socially embedded, culturally responsive practices.

Critical Evaluation: Applicability to the Indian Context

While the ATTUNE research programme has generated valuable insights within high-income settings, its direct applicability to the Indian context, particularly for at-risk adolescents, remains limited. In India, approximately 20% of adolescents experience mental health disorders, yet help-seeking is constrained by stigma, underreporting, and limited service availability, especially in rural and marginalised urban settings (Das et al., 2016; Gaur et al., 2019). Although national initiatives such as the National Mental Health Programme and the Rashtriya Kishor Swasthya Karyakram aim to integrate adolescent mental health into primary care, implementation is hindered by resource shortages and a lack of trained personnel (Hossain & Purohit, 2019).

These constraints are particularly pronounced in child-care institutions and orphanages. Structural limitations including severe budgetary restrictions, overcrowding, minimal staffing, and the absence of career or life counselling render intensive, facilitator-led interventions logistically unfeasible in most settings. Moreover, systemic barriers such as the lack of caste or EWS certification for orphans further restrict access to educational and economic opportunities, compounding psychosocial vulnerability during the transition out of institutional care.

From a developmental perspective, the ATTUNE model also presupposes levels of stability, cognitive scaffolding, and resource availability that may not hold for adolescents experiencing high-intensity and chronic ACEs in LMIC contexts. As Vostanis (2010) notes, the developmental trajectories of at-risk children are shaped by the magnitude, timing, and accumulation of adversity, necessitating interventions that are substantially adapted to local realities rather than directly transplanted from high-income settings.

That said, certain elements of the ATTUNE approach, particularly low-cost, school- or community-based creative activities, may be selectively adaptable in better-resourced urban orphanages or NGO-run institutions. Evidence from the Indian context suggests that such interventions can support early identification of distress and promote psychosocial wellbeing when appropriately contextualised (Das et al., 2016). However, meaningful application would require simplification of intervention protocols, reduced reliance on specialised facilitators, and integration with vocational and life-skills training to address the immediate developmental needs of adolescents approaching adulthood.

Conclusion

In sum, the ATTUNE project has made significant conceptual and empirical contributions to adolescent mental health research by foregrounding participatory, creative, and community-based interventions. Its work has enriched the scientific literature on trauma-informed practices and expanded methodological approaches within global mental health. However, substantial adaptation is required for these models to be viable in LMIC contexts such as India, particularly for highly marginalised populations. Future research would benefit from co-developing intervention frameworks with local institutions to ensure cultural relevance, feasibility, and alignment with the structural realities faced by at-risk adolescents.

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