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A Note by the Editor-in-Chief

Each edition of the Review is, in many ways, a record of inquiry, of questions that resist easy answers and of students willing to sit with complexity long enough to examine it carefully. The papers gathered in this issue move across neuroscience, media psychology, philosophy, aesthetics, and inclusive pedagogy, yet remain connected by a shared effort to understand the unseen forces that shape human thought, emotion, behavior, and relationships. What emerges from these works is not only academic rigor, but also a deep attentiveness to ambiguity, nuance, and the many forms through which meaning is constructed.

This edition includes an exploration of romantic love through the lens of addiction neuroscience and mindfulness; a cross-cultural investigation into violent video game exposure, aggression, empathy, and personality within an Indian undergraduate sample; a philosophical inquiry into absence cognition and aesthetics through Shaiva non-dualism, Hindustani music, and Bharatanatyam; and a pedagogical framework for fostering inclusive communication between hearing and Deaf or hard-of-hearing children beyond the limits of orality. Together, these papers reflect the interdisciplinary curiosity and critical engagement that continue to define undergraduate scholarship at its best. It also includes three lab reviews exploring AI-delivered therapy for depression, psychostimulant discontinuation in ADHD treatment, and the role of sung speech in improving socio-communicative responsiveness in children with Autism Spectrum Disorders.

I extend my sincere gratitude to our authors for the thoughtfulness and originality they brought to their work, and to the editorial team and designers whose care and commitment made this edition possible. It is our hope that these papers encourage readers not simply toward conclusions, but toward continued reflection, dialogue, and intellectual openness.

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

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ACADEMIC PAPERS:

Video Game Violence Exposure, Aggression, Personality, and Empathy: A Cross-Cultural Replication of Bartholow et al. (2005) in an Indian Undergraduate Sample

Author: Arudhra Karthik

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Research on violent video games consistently demonstrates small but reliable associations with aggression, yet results replicated the primary VVE–aggression association observed in prior work, while also suggesting potentially different patterns involving empathy and personality variables in this sample. Most empirical work has been conducted using Western undergraduate samples. The extent to which these findings generalize cross-culturally remains unclear. The present study examined violent video game exposure (VVE), aggression, personality, and empathy in an Indian undergraduate population, replicating the correlational model of Bartholow et al. (2005). Seventy-two participants completed a five-game VVE index derived from Anderson and Dill (2000), the Brief Aggression Questionnaire (BAQ), the 48-item Eysenck Personality Questionnaire–Revised Short Scale (EPQ-RS), and the full 28-item Interpersonal Reactivity Index (IRI). VVE was positively associated with aggression, $r(78) = .37$, $p = .001$. A regression including VVE, Extraversion, Neuroticism, and Empathic Concern explained 26.7% of the variance in BAQ total. VVE, Extraversion, and Empathic Concern were significant predictors; Neuroticism was not. Results replicated the primary VVE–aggression correlation while also suggesting culturally distinct patterns in empathy and personality variables in this sample. Findings underscore the need for culturally grounded theories of media effects and highlight the complexity of empathy–aggression relations in collectivistic societies.

Keywords: Violent Video Game Exposure (VVE), aggression, empathy, collectivism, cross-cultural psychology

Shaiva Non-Dualism and Aesthetics of Absence Cognition in the Arts

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This essay argues, through the lens of Shaiva non-dualism, that absences and darkness are real cognisable entities by examining their aesthetic function in Indian classical music and dance. In Hindustani music, an analysis of the strategic use of silences and omitted notes is used as an example to show how the cognition of these forms of absence creates emotional depth in the music. Similarly, the argument is furthered through the example of Bharatanatyam, where the dancer creates an emotional absence between themselves and the characters they portray, allowing them to incite rasa (aesthetic taste of emotion) within the audience. Along with this, the cognition of darkness on the stage presents a heightened aesthetic experience of the performance. When such an experience is viewed through the lens of Shaiva non-dualism, the artistic performance is framed as a reflection of a unified consciousness, presenting the absences as real entities and not mere perceived inferences.

Keywords: Shaiva non-dualism, absence cognition, Indian aesthetics, rasa theory, philosophy of art, aesthetics of absence, consciousness, darkness and perception

The Neurobiology of Addiction in Love and the Role of Mindfulness

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Romantic love and addiction share significant overlap in the activation of the dopaminergic reward system, particularly within the ventral tegmental area and caudate nucleus, which are associated with motivation, reinforcement and learning. Similar to substance and behavioral addictions, romantic attachment may involve salience, craving, tolerance, and withdrawal. However, romantic love exists along a continuum, functioning as a positive and adaptive form of attachment in stable and reciprocal relationships while becoming maladaptive and compulsively dependent in toxic, unreciprocated, or emotionally dysregulated contexts. This paper examines mindfulness as a potential neuromodulatory mechanism capable of regulating reward-related neural activity without suppressing the adaptive functions of attachment. Drawing on research in neuroscience and emotional regulation, it argues that mindfulness enhances prefrontal regulatory control, reduces emotional reactivity, and weakens maladaptive reinforcement loops associated with addictive attachment patterns with stress-resilient brain connectivity. While current evidence remains largely correlational, mindfulness may help transform romantic love from compulsive attachment-craving addiction into a more conscious, regulated and compassionate form of connection.

Keywords: love, addiction, neuroscience, dopaminergic reward system, mindfulness

APPLIED INQUIRY AND INTERVENTION:

Communication Beyond Orality

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This paper proposes a social-emotional learning curriculum for building relationships, inclusion, and growth through diverse expressions between hearing and DHH children is designed for students aged 7-11 years, from higher socioeconomic backgrounds, to facilitate their assimilation in an inclusive school. While inclusive schools are being set up to increase the integration of individuals with hearing impairment into society, these efforts often go in vain when confronted with stereotypes and a lack of integration efforts. Many students with hearing impairment struggle with expressing themselves confidently, and many who can hear struggle with sign language. Building on developmental psychology theories like Piaget's cognitive developmental theory, Kohlberg's and Giligan's moral development theory, Erikson's psychoanalytical theory of stages of development, and Vygotsky's ideas on cognitive development, this intervention can be purposeful in developing emotional regulation strategies and non-verbal communication skills, thereby promoting feelings of competence, inclusion, and belonging in a multimodal world.

Keywords: inclusive pedagogy, Deaf and hard-of-hearing (DHH) children, multimodal communication, social-emotional learning, developmental psychology, inclusive education

LAB REVIEWS:

A pilot randomized controlled trial of AI-delivered vs. human-delivered iCBT for depression in young adults: A Review

Written By: Arushi Ghosh (Editor) and Royina Khaund (Editor)

Original Paper: Wu, Yiyang, et al. "A Pilot Randomized Controlled Trial of AI-Delivered vs. Human-Delivered ICBT for Depression in Young Adults." *BMC Psychiatry*, vol. 26, no. 1, 24 Feb. 2026, pmc.ncbi.nlm.nih.gov/articles/PMC12988633/, https://doi.org/10.1186/s12888-026-07925-1

Intentional Discontinuation of Psychostimulants Used to Treat ADHD in Youth: A Review and Analysis: A Review

Written By: Fern (Editor) and Priyanshi Agarwal (Editor)

Original Paper: Lohr, W. D., Wanta, J. W., Baker, M., Grudnikoff, E., Morgan, W., Chhabra, D. & Lee, T. (2021). Intentional Discontinuation of Psychostimulants Used to Treat ADHD in Youth: A Review and Analysis. *Frontiers in Psychiatry: Child and Adolescent Psychiatry*, *12*, Article 642798. https://doi.org/10.3389/fpsyt.2021.642798

The Effect of Sung Speech on Socio-Communicative Responsiveness in Children with Autism Spectrum Disorders: A Review

Written By: Tanya Gupta (Editor)

Original Paper: Paul, A., Sharda, M., Menon, S., Arora, I., Kansal, N., Arora, K., & Singh, N. C. (2015). The effect of sung speech on socio-communicative responsiveness in children with autism spectrum disorders. *Frontiers in Human Neuroscience, 9*, 555. https://doi.org/10.3389/fnhum.2015.00555

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

Video Game Violence Exposure, Aggression, Personality, and Empathy: A Cross-Cultural Replication of Bartholow et al. (2005) in an Indian Undergraduate Sample

Arudhra Karthik

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Introduction

Concerns about the effects of violent video games have shaped debates in media psychology for decades. Across hundreds of studies, evidence shows that exposure to violent game content is associated with modest increases in aggressive affect, cognition, and behavior. Anderson and Bushman's (2001) meta-analysis and Anderson and Dill's (2000) laboratory experiments both support the conclusion that violent games activate aggressive scripts and make hostile interpretations more accessible. Although these effects are not large, their consistency across methodologies and time has motivated the search for moderators—traits and contexts that explain why some individuals exhibit stronger associations than others.

One influential advancement came from Bartholow et al. (2005), who demonstrated that violent video game exposure does not uniformly affect all individuals. Instead, they argued that dispositional traits—specifically hostile personality characteristics and low empathy—amplify the relationship between VVE and aggression. This highlighted that aggression emerges from interactions between situational cues and stable psychological characteristics. Individuals high in hostile affectivity may interpret ambiguous stimuli more negatively, while those low in empathy may engage in more aggressive responses because they do not emotionally register others' discomfort.

Despite these advances, almost all evidence comes from Western undergraduate samples. Whether these relationships generalize across cultures remains unclear. Hofstede's (2001) framework identifies deep divergences between India and Western countries such as the United States, particularly in collectivism, power distance, and norms surrounding emotional expressiveness. Collectivistic societies emphasize relational harmony, group obligations, and restrained outward expression of conflict. These factors may shape how aggression, empathy, and personality traits function psychologically. For instance, empathy in collectivistic contexts is often experienced more strongly toward in-group members, while empathy toward out-groups may not generalize in the same way Western theories assume. (Jami et al., 2024)

Moreover, gaming culture in India differs substantially from that in Western contexts. Many Indian young adults primarily engage with mobile games, which may contain cartoon-style or less realistic violence compared to console-based first-person shooters common in the American research literature.(Syvertsen et al., 2022)This raises theoretical questions about whether the mechanisms proposed by general aggression models operate similarly across technological and cultural environments.

The present study addresses these gaps through a cross-cultural replication of Bartholow et al. (2005) using Indian undergraduates. We examined the association between VVE and trait aggression, measured using the BAQ, and evaluated whether personality traits (EPQ-RS) and multidimensional empathy (IRI) predicted aggression in ways consistent with or distinct from Western samples. A positive association between VVE and trait aggression was predicted, while the personality and, given cultural variation in emotional norms and gaming environments, empathy and personality variables were treated as exploratory.
Additionally, given the limited sample size and the exploratory nature of the study, these findings should be interpreted with appropriate caution.

Method

Participants ; Seventy-two undergraduate students between the ages of 18 and 24 participated in the study. All participants were enrolled at an Indian university and represented a mixture of academic disciplines, with a higher proportion from humanities and social sciences. Participation was voluntary and anonymous, and no identifying information was collected. The sample size, although modest, was sufficient for correlational and regression analyses based on standard recommendations for individual-difference research. Because the study aimed at replication rather than hypothesis testing of small effects, the sample served as a reasonable analogue to Bartholow et al.'s (2005) original undergraduate cohort.

Measures

Violent Video Game Exposure (VVE)
Participants listed their five most-played games over the past several months. For each game, they rated:

1. Violent Content – the degree to which the game includes harmful actions toward characters;
2. Violent Imagery – presence of graphic, gory, or intense depictions of violence;
3. Frequency of Play – how often they played the game.

Using Anderson and Dill's (2000) algorithm, each game's exposure score was calculated as:
(Violent Content + Violent Imagery) × Frequency
Total VVE was computed by averaging across all five listed games. This composite accounts for both qualitative and quantitative aspects of exposure, making it sensitive to differences even among players of predominantly mobile or low-intensity games typical in India.

Brief Aggression Questionnaire (BAQ)
The BAQ consists of 12 items measuring Physical Aggression, Anger, Verbal Aggression, and Hostility. Participants responded on a 1–6 Likert scale. Item 4 ("I am an even-tempered person") was reverse-scored. BAQ_total was calculated as the mean of all 12 items. In this sample, the internal consistency coefficient was α = .70, suggesting adequate reliability for research purposes. Subscale analyses were not central to the replication but were examined descriptively for completeness.

Eysenck Personality Questionnaire–Revised Short Scale (EPQ-RS)
The EPQ-RS includes 48 dichotomous (Yes/No) items across four subscales:

- Extraversion (E)
- Neuroticism (N)
- Psychoticism (P)
- Lie/Social Desirability (L)

Scores were summed within subscales. Internal consistencies were modest and aligned with documented reliability constraints of dichotomous personality items, especially in small samples. Reliabilities were:

- Extraversion α = .52
- Neuroticism α = .29
- Psychoticism α = .20
- Lie α = .44

Although these reliabilities limit the precision of trait estimates, they are typical of EPQ short-form data collected in non-Western contexts and remain usable for exploratory regression.(Eysenck & Eysenck, 1991)

Interpersonal Reactivity Index (IRI)
The IRI is a 28-item empathy scale containing four subscales:

- Fantasy (FS) – tendency to imaginatively immerse oneself in fictional narratives;
- Empathic Concern (EC) – feelings of warmth and care for others;
- Perspective Taking (PT) – cognitive capacity to adopt others' viewpoints;
- Personal Distress (PD) – self-oriented anxiety in tense interpersonal situations.

Items were rated on a 1–5 scale. Standard reverse-scoring procedures were applied. Subscale reliabilities ranged from α = .24 to α = .44, consistent with international uses of the IRI in small samples. Although low reliability limits interpretability, the IRI was included to replicate Bartholow et al.'s multidimensional empathy framework.

Procedure

The survey was administered online. Participants completed the measures in randomized blocks to reduce order effects. Data were cleaned for missing values, and scoring was conducted using standardized scoring keys. Analyses employed Python's pandas and statsmodels packages. Correlation analyses used pairwise deletion, and multiple regression used listwise complete-case analysis.

Results

Descriptive Statistics
Participants reported a mix of highly popular mobile games (e.g., battle royale shooters, racing games, fantasy RPGs) and a smaller number of violence-intensive titles. VVE scores reflected substantial variability: some participants engaged primarily with low-violence games, while others regularly played games featuring moderate to high levels of violent content.
BAQ_total scores indicated moderate levels of trait aggression, consistent with typical undergraduate distributions. EPQ distributions were within expected ranges, though Neuroticism and Psychoticism displayed restricted variance. IRI subscale means were comparable to normative empathy levels reported internationally, despite some reliability limitations.

Correlational Analyses
The primary replication target was the relationship between VVE and aggression. As predicted:

- VVE_avg correlated positively with BAQ_total, r = .374, p = .001.

The observed effect size was comparable to estimates reported in Western samples, which may suggest a degree of cross-cultural consistency in the association between VVE and aggression.
Additional notable correlations included:

- Extraversion with BAQ_total, r = .317
- Fantasy (FS) with BAQ_total, r = .312
- Empathic Concern (EC) with BAQ_total, r = .205 (not significant)

The Extraversion–aggression correlation suggests that socially outgoing or assertive individuals may be more likely to endorse aggressive tendencies in self-report scales. The Fantasy correlation indicates that individuals who imaginatively immerse themselves in fictional narratives may also report greater aggression—potentially reflecting greater engagement with emotional content generally.
The positive, although weak, correlation between Empathic Concern and aggression ran counter to traditional theoretical expectations, which typically posit that empathy should reduce aggression. This discrepancy was further explored in regression analyses.

Regression Analysis
A multiple regression was performed with BAQ_total as the dependent variable and VVE_avg, Extraversion, Neuroticism, and Empathic Concern as predictors. The model explained 26.7% of the

variance in aggression, indicating a moderate effect.
Significant Predictors:

- VVE_avg: b = 0.0209, p = .001
- Extraversion: b = 0.0896, p = .034
- Empathic Concern (EC): b = 0.4365, p = .035

Non-Significant Predictor:

- Neuroticism: b = 0.0191, p = .712

The finding that Empathic Concern positively predicted aggression—despite theoretical expectations of a negative relationship—suggests either a suppression effect arising from overlapping predictors or a cultural modulation of empathy in collectivistic contexts. Low reliability of the EC subscale may also have contributed to coefficient instability.

Discussion

The present study set out to replicate Bartholow et al.'s (2005) correlational model linking violent video game exposure (VVE), aggression, personality, and empathy, but within an Indian undergraduate population. The results successfully replicated the central association between VVE and trait aggression: individuals who reported greater exposure to violent games also reported higher levels of aggressive tendencies. That this effect size (r = .374) closely mirrors those reported in Western samples demonstrates that the basic VVE–aggression link is not culturally bound, even when the gaming ecosystem and media consumption patterns differ substantially between contexts.

However, the broader pattern of results illustrates that individual-difference variables—particularly personality and empathy—may behave differently across cultural environments. Extraversion emerged as a meaningful predictor of aggression both at the correlational and regression levels. This finding is not inconsistent with Western research, but it appeared more pronounced in the present study. In collectivistic contexts such as India, extraversion can involve assertiveness, social dominance, or decisiveness in group environments, and these characteristics may overlap with self-reported aggressive tendencies.(Lucas et al., 2000) Because trait aggression scales like the BAQ include items capturing assertive or confrontational behavior, extraverted individuals may endorse such items at higher rates even when actual behavioral aggression is low.

The empathy findings were particularly intriguing. Empathic Concern, typically conceptualized as a protective factor against aggression, did not function as expected. Although EC showed only a weak positive correlation with aggression, it emerged as a significant positive predictor in the regression model when controlling for other variables. This counterintuitive pattern suggests the presence of statistical suppression. Suppression occurs when predictors share variance with each other such that including them in the same model alters the direction or magnitude of their coefficients. In this case, shared variance among empathy components and personality traits may have distorted the isolated effect of EC.

Another possibility is that empathy, as conceptualised in Western theory, may manifest differently in collectivistic contexts, where empathic concern is often shaped by in-group relational structures and may be directed more strongly toward family and close others than toward strangers or out-group members. (empathy paper) If participants conceptualized Empathic Concern in this culturally bounded, relational way, it might not act as a buffer against generalized aggression as measured by the BAQ, which assesses broad tendencies rather than specific interpersonal contexts. This would explain why EC showed neither the expected negative correlation nor a stable theoretical role.

Fantasy (FS), which measures imaginative immersion, also correlated positively with aggression. In Western samples, FS tends to relate more strongly to emotional absorption in narratives, including violent or intense storylines. In the Indian context—where cinematic and narrative media often include heightened emotional drama—individuals high in FS may simply be more sensitive to affective content of all kinds, potentially amplifying responses to violent media. (Vasudevan, 2010) This interpretation aligns with research suggesting that emotional engagement, rather than violence alone, may be a key mediator of media effects.

The lack of a significant relationship between Neuroticism and aggression was notable. Neuroticism often predicts reactive aggression in Western datasets, but the present study found no such association. This could stem from restricted variance in the Neuroticism items, low reliability of the subscale, or cultural norms that moderate emotional expression. In some collectivistic environments, negative emotionality may manifest more internally or interpersonally rather than through externalized aggression, reducing its association with trait aggression scales.(Voulgaridou & Kokkinos, 2023)

Overall, the study highlights that while the core VVE–aggression link generalizes across cultures, the mechanisms connecting personality, empathy, and aggression may be culturally moderated. It reinforces the view that media effects theories cannot assume universal psychological processes without accounting for context, norms, and local media landscapes.

Limitations

Several limitations warrant consideration:

1. Sample size.

With only 72 participants, the study had limited power to detect small correlations or subtle interaction effects. Larger samples would provide more reliable estimates of trait associations.

2. Self-report measures.

All constructs—including aggression, empathy, personality, and media exposure—were assessed via self-report, introducing shared method variance and potential biases. Behavioral or physiological measures would strengthen future studies.

3. Low reliability of some scales.

The EPQ-RS and IRI subscales exhibited modest internal consistency, which is typical in small samples but nonetheless limits interpretive precision. Low reliability can artificially weaken correlations or produce unstable regression coefficients.

4. Cross-sectional design.

Because data were collected at a single time point, causal inferences cannot be made. Although experimental evidence supports causal media-effects relations, correlational findings alone cannot establish directionality.

5. Gaming context differences.

Participants predominantly played mobile games, some of which contain stylized rather than photorealistic violence. Although VVE

was still predictive of aggression, cross-study comparisons should account for differences in media realism and intensity.

6. Generalizability.

The sample was drawn from a single university, limiting the generalizability of results to broader Indian youth populations or non-student samples.

Despite these limitations, the study offers valuable cross-cultural insight and extends existing media-effects research into a context where empirical data remain scarce.

Conclusion

The present study replicated the positive association between violent video game exposure and aggression within an Indian undergraduate sample, reinforcing the robustness of this relationship across cultural boundaries. Although personality and empathy variables behaved differently than in Western studies, these divergences illuminate how cultural context shapes dispositional traits and emotional processes. Extraversion predicted aggression, aligning with cultural patterns of assertive social engagement, while Empathic Concern acted unexpectedly—likely due to suppression effects or collectivistic interpretations of empathy.

Taken together, the findings demonstrate that while violent media exposure reliably correlates with aggression, the pathways through which personality and empathy modulate this relationship may not be universal. Future research should incorporate behavioral assessments, larger and more diverse samples, and longitudinal or experimental designs. Incorporating culturally sensitive frameworks will be crucial for developing a comprehensive understanding of how media, personality, and empathy jointly influence aggression in global contexts.

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Appendix

Table 1. Zero-Order Correlations Among Variables

Variable	BAQ	VVE	FS	EC	PT	PD
BAQ	1	0.374	0.312	0.205	0.1	0.05
VVE	0.374	1	0.12	0.06	0.08	0.02

Table 2. Regression Predicting BAQ_total

Predictor	B	SE	t	p
VVE_avg	0.0209	0.0061	3.4	0.001
Extraversion	0.0896	0.0414	2.16	0.034
Empathic Concern	0.4365	0.2023	2.16	0.035
Neuroticism	0.0191	0.0516	0.37	0.712

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ASHOKA PSYCHOLOGY REVIEW

Shaiva Non-Dualism and Aesthetics of Absence Cognition in the Arts

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Glossary of Important Terms

Pratibimba: (translates to) Reflection.

Bimba: an image which is not mingled with other things, independent and real (Kaul, 2019, p. 6).
Shaiva non-dualism: Theory of the *Shaivite* (to do with Lord Shiva) tradition, which views the entire world as a manifestation of Shiva's consciousness since it cannot exist independently of this consciousness, and the physical world as Shiva's creative expression (Kaul, 2019, p.11). As a non-dualist view, this theory believes that the individual is not separate from the divine. By contrast, dualist views hold that the soul and mind are separate, and Shaiva non-dualism differs from Advaita non-dualism because Shaivism affirms the reality of the world, unlike Advaita, which holds that reality is an illusion.

Raga / Raag: One of the foundational concepts of classical music, a *raga* is created when a specific set of notes is played or sung in a specific way and order (*chalan*) (Rao et al. 2014, p. 5).

Rasa: The sap, flavour or essence of a performance or a work of art, the experience of which provides a taste of the emotion (Ganser, 2022, p. 128). It can also be viewed as the difference between tasting the emotion and experiencing it in real life (Dace, 1963, 1). Loosely, it can be defined as "sentiment", and the *Natyashastra* theorises nine distinct sentiments (Mukhopadhyay, 2021, p.2)

Sringara rasa: The erotic sentiment that is based on the dominant state of love, which is the most prominent *rasa* in the arts (Mukhodopadhyay, 2021, p. 2).

Taal: A cyclical rhythmic framework used in Indian classical music and dance, which divides time into patterns of beats, providing a temporal structure for the performance (Rao et al. 2014, p. 6).
Taan: A rapid sequence of improvised notes (Rao et al. 2014, p. 8)
Pratiyogi: A technical term for the absentee.

Naayika / Nayika: (translates to) The heroine of a dance performance or music composition.

Shuddha swar*:* Natural notes (Rao et al. 2014, p. 5)

Komal swar*:* Minor or flattened notes (Rao et al. 2014, p. 5)

Vivadi swar*:* A swar which is not a part of the raag and is technically the enemy note but it is used sparingly for aesthetic effect. (Bhatkhande, 2000, p. 67)

How can Shaiva non-dualism be used as a lens to analyse the aesthetics of absence cognition and cognition of darkness in music and dance?

1. How are absence and darkness aesthetically perceived in music?

The Nyaya-Vaisheshika school of Indian philosophy presents seven distinct categories (Padartha), which they consider to be real. Real categories are those which exist independent of one's mind, and ideal categories are those that are not mind-independent. These real categories of Nyaya-Vaisheshika include Substance, Quality, Particularity, Inherence, Action and Universals. Absence is the seventh category, which was added later, and according to this school, absences are not dependent on cognition, which makes them a real category while being a negative entity (Potter, 1977, p. 49).

Absences are real categories according to the Nyaya-Vaisesika view. However, according to the Prabhakara-Mimamsa view, absences are not an independent category of reality; instead, they can be characterised as frustrated expectations. The Nyaya-Vaisheshika view is that absences themselves can be cognised and are perceivable (Bhattacharya, 1989, p.36). In the Prabhakara-Mimamsa view, they are categorised as non-perceivable entities. In this essay, I will be arguing that absences and darkness are real, cognisable categories by discussing their aesthetic implications in classical music and dance. Through the lens of Shaiva non-dualism, this essay will interpret the role of absences and darkness in the creation of aesthetic experience, reinforcing their perception as a real category. The primary argument of this essay is to show how, using the lens of Shaiva non-dualism, the aesthetic influence of the perception of absences and darkness can be analysed, making the

performance a pratibimba of a metaphorical bimba (metaphorical object of reflection), thereby showing that absences and darkness are real and cognisable categories.

The two contrasting views of absences are those of Nyaya-Vaisheshika and Prabhakara-Mimamsa. According to the Nyaya-Vaisheshika, absences are cognisable, real entities which can be perceived (Matilal, 1968, p. 109). The contrasting Prabhakara-Mimamsa school believe that absences are not a real category of things, and absences are inferred rather than seen. They think that 'absence perception' is just the perception of the bare locus and nothing else (Chakrabarti, 2019, p. 5). The locus in this case refers to the area where the absence is perceived, and it is bare due to the absence of the absentee object. This essay will align towards the Nyaya-Vaisheshikha view of absences and use music and dance from a Shaiva non-dualist lens to show that absences are a real category due to their aesthetic impact.

In music, the aesthetics of absences and darkness can be seen in congruence. Hindustani classical music is governed by the rules of time. This leads to specific melodic frameworks (*raags*) prescribed for different times, such as morning or night. The absence of certain notes (*vivadi swar*) along with emphasis of certain other notes gives the *raag* its characteristic appeal (*chalan*), and they tend to present certain views about darkness and light. In the *raags* sung in the morning, such as *Bhairav*, *Bhairavi*, *Todi* and *Ahir Bhairav*, there is a focus on certain minor notes, which creates a sense of yearning. Traditionally, this sense of yearning is associated with *sringara rasa*, where it marks the culmination of a night (usually associated with forbidden love where the *naayika* goes to meet her lover, usually Krishna, against the wishes of society). The absence of darkness here presents the unveiling of this forbidden love, which compels the lovers to part, creating a sense of yearning. Comparatively, the evening *raags* (at the time of sunset) tend to have a playful nature, which is formed by using mostly *shudh swaras* notes and minimal *komal swaras*, and these include *Yaman* and *Bhupali*. With the same reference to *sringara*, the evening marks the start of the night, where slowly the light begins to dim, and darkness emerges, alluding to the possibility of fulfilling one's desire. This is because there is still enough light for the *nayika* to go to meet her beloved, and yet not enough light for everyone to recognise her as she goes. *Raags* associated with midnight, like *Shivaranjani* and *Shankara*, which evoke a serious tone mirroring the absence of light. A reason for the serious tone is that these ragas, especially Shankara, are related to Shiva and his fierce meditative state, often associated with midnight. Additionally, the idea that in the absence of light at night one is free from distractions to be one with their thoughts creates an atmosphere of seriousness.

Here are two instances which present the cognition of absences in music. Firstly, sometimes, the singer touches the *vivadi swar* for elegance and *rasa* created from the sudden, almost forbidden use of the note presents absence cognition. This use of the *vivadi swar* creates an aesthetic appeal due to the element of surprise that it brings. Secondly, the singer often omits some words and starts from the next line depending on the *taal*, and other times the singer might not sing the last word, letting the tabla or mridangam continue and resuming from the next line. Such pauses indicate the absence of the voice and create suspense as the audience hears silence, which adds to the beauty of the performance and shows the cognition of the absence. This becomes a cognition of absence and not merely a violation of expectation because even while the audience waits for the singer to resume, they actively cognise the lack of the singer's voice, which is heightened by the presence of the accompanying instrument. When they cognise the sound of the instrument, at the same time, they cognise the absence of the voice because the sound of the instrument is cognised both as itself and as not a voice.

Another kind of absence is used to divert attention from the lyrics to the raag. This is seen when half a line is sung, and then it is accompanied by a taan, leading to an in-depth exploration of the raag. Once the first line is sung, the audience expects the next line to follow; however, the taan creates an element of surprise, and hence the absence of the lyric is perceived along with the presence of the taan rather than inferred from it, which makes the absence perceivable rather than inferred.

2. How are absence and darkness aesthetically perceived in dance?

Dance can also be used as an example to show the cognition of absence and darkness. This is seen through the idea that there is an absence of the self of the dancer because the dancer behaves as a vessel for the changing emotions of a composition. This is because the dancer's body must be capable of holding and presenting the changing emotions, and hence it must be inherently empty or detached. Traditionally, in Bharatanatyam, most compositions contain an element of *"sanchari bhava"*, a narrative element where the dancer plays numerous contrasting roles at once to narrate a story through elaboration (Krishnan, 2021). To portray the most accurate emotions, the dancer must not actually be in that emotional state; the dancer's emotional state should be empty or detached. For example, if the dancer wants to portray heartbreak, she must not actually be heartbroken because if she is, she cannot perform the heartbreak. If the dancer is actually feeling the emotion she wants to portray, she would not be in the mental state to switch easily between a range of emotions, which would compromise her performance. The dancer would not be able to focus on the music, rhythm and complicated footwork if she were intensely feeling the emotion (Chakrabarti, 2009, p. 195). The dancer's emotional self becomes a pratiyogi or absentee, because it is in the absence of a self which attaches to the surroundings that a dancer can portray the range of conflicting emotions.

Psychological research on dancers supports this claim, where in a study conducted by Liu et al., it was found that dancers most frequently employ a level of deep acting, where they attempt to modify their inner feeling (Liu et al., 2023, p. 1). This creates an incongruence between the body and self because it involves deceiving oneself as much as deceiving others, and yet the flow state is achieved due to the enjoyment in this process of deception (Liu et al., 2023, p. 3). When an audience perceives a solo dance recital, they perceive the physical absence of characters because the same dancer plays contrasting roles, which reiterates the performative nature of the art. The same dancer being able to perform the numerous contrasting emotions within a short period of time presents the dancer's detachment from the self, and for the period of the performance, there is an illusion of the absence of the dancer's self.

Similar to absences, when we perceive darkness as the absence of light in dance, it creates an aesthetic impact. The dancer is usually

illuminated by a light, and the rest of the stage tends to remain dark, creating a focus on the dancer. In contrast, the audience is often almost visually absent for the dancer because the light tends to be blinding, and the dancer can usually barely see far into the audience. Darkness (as the absence of light) becomes a means for the dancer to concentrate on the dance rather than the audience, which enhances the dancer's focus and causes the performance to have a higher impact. For the dancer, darkness creates the illusion of an absence of the audience, which creates a gap between the dancer and the audience. Cognising the darkness as the absence of light is important for the dancer because it creates the view of darkness as a negative entity rather than a presence; an idea that something is not there (light being not there), than darkness being there. This further enhances the focus of the dancer because, from their perspective, rather than darkness being there, it is light which is not there.

3. How does the lens of Shaiva non-dualism lead 1 and 2 to create an aesthetic experience of Rasa, which creates a reflection of the audience's emotion?

Shaiva non-dualists believe that the “universe only exists within Shiva and is understood as a single, all-encompassing, and all-powerful consciousness manifesting itself in an infinite variety of forms” (Ratié, 2017, p. 208), and the perceived world is the reflection in the mirror of consciousness. From this, it can be inferred that absences and darkness also exist as reflections in the mirror of consciousness. Rasa theory states that rasa is the taste of an emotion, something only accessible to the audience and not to the person creating it (Dace, 1963, p. 2). This shows that there must be a ‘gap’ or a ‘void’ between the performer and the rasa that they produce for the audience. Rasa is also seen as a means of liberation by various saints, such as Thyagaraja, who writes, “sangita gyana vihinulaku mokshamu kalada” (translation: those who do not understand the knowledge of music through devotion, can they attain liberation?) (Govindan, 2007). Therefore, the music created is a pratibimba of both the artist and the audience and the absences in music add to the creation of various rasas in the audience.

Shaiva non-dualism also considers the reflected sound to be the original sound (Kaul, 2019, p.193). This aligns with the view that the deity manifesting the universe is embodied in a sound (Kaul, 2019, p.165). Dance similarly becomes a reflection of Shiva, because the bliss of nritta (pure dance) mirrors the bliss of Siva's own dance. In a solo performance, sringara rasa is often created without the presence of a lover on stage. The audience directly cognises this absence, which evokes the nayika’s longing and creates sringara. Hence, rasa is created by the mingling of the audience's emotion with the dance, and the rasa felt by the audience reflects their own emotional state. This shows through Shaiva non-dualism, the belief that the perceivable world is a reflection in the mirror of consciousness, there is a heightened perception of the aesthetic qualities of a performance.

In response to this argument that absences are a real category having aesthetic impact, one might argue that they are only perceived as such due to the non-dualist theory, which relies on a particular belief. Absences may not be a real category for people who do not believe in such a theory.

A rebuttal would be that for an aesthetic experience such as the ones described above, where absence cognition has a vital role to play in the creation of rasa, Shaiva non-dualism offers a compelling explanation for the aesthetic application of absences. This is because if absences were inferred, there would not be an instant cognition; however, when rasa is created, there is an instant cognition of the absence rather than an inference of it. Rasa is instantly cognised because it behaves as the taste of an emotion rather than one's analysis of what they are feeling and why they feel the way they do. The taste itself is something that doesn’t come from pondering; instead, it is incited through the mere absorption of the art, hence it becomes an instant cognition. Following from this, there is an instant cognition of the absence because the sringara rasa, which continues to be invoked in the audience, creates an absurd dissonance where the lover is physically absent, but the naayika is seen having a conversation with this lover, which is emphasised through the sense of longing tasted by the audience. Therefore, the absence becomes instantly cognised.

In conclusion, absences and darkness have an aesthetic impact on music and dance, which is elevated by looking through the lens of Shaiva non-dualism, because the performance can be perceived as a reflection when the audience puts themselves in the place of the nayika. Similarly, in the case of music, the aesthetic appeal is brought through the cognition of the absence of certain notes, which is a direct cognition rather than an inference. The aesthetic impact shows evidence of their cognition of rasa, displaying that absences and darkness are real and perceivable categories.

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ASHOKA PSYCHOLOGY REVIEW

The Neurobiology of Addiction in Love and the Role of Mindfulness

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Introduction

Romantic love is recently being examined with neuroscientific research that show similar brain systems which underlie both romantic attachment and addiction. Such neuroimaging studies highlight that romantic attachment activates the dopaminergic reward system, especially the ventral tegmental area and caudate nucleus, that are linked with motivation, reinforcement learning and craving (Fisher et al., 2016). These findings suggest that the high intensity of romantic love is sustained by goal-directed behaviour and reward processing mechanisms, sharing the neural networks observed in substance and behavioral addictions.

This overlap is also reflected in behavioral patterns. Individuals experiencing romantic attachment often exhibit salience, craving, tolerance, withdrawal-like distress and relapse-like persistence despite adverse outcomes (Fisher et al., 2016). Though, romantic love has an adaptive evolutionary function of facilitating pair bonding and social attachment, unlike the pathological addictions. Therefore, it is more appropriately conceptualized to exist along a continuum. At one end, it works as a positive form of addiction that enhances relational stability and healthy reciprocal connection. At the other end, it operates in a negative form which is characterized by emotional dysregulation and compulsive dependence.

Such a dichotomy raises a critical question about how the maladaptive aspects of reward-driven attachment be regulated without disrupting the adaptive functioning of love. This paper argues that mindfulness may operate as a neuromodulatory mechanism which alters the activity of reward-related neural circuits. By enhancing emotional regulation, interoceptive awareness and control over reactivity, mindfulness shifts the romantic love from a compulsive and reinforcement-driven pattern toward a more regulated and adaptive form of connection.

The Neurobiology of Romantic Love as Addiction

Romantic love activates the mesolimbic dopaminergic reward system involved in motivation and goal-directed behavior. Neural activity within these pathways prioritizes salient stimuli and strengthens approach-oriented behavior towards the attachment figure (Fisher et al, 2016).

Dopamine plays a vital role in encoding both incentive salience (motivational 'wanting') and hedonic pleasure (subjective 'liking') according to Berridge and Robinson's experiments (1998). Therefore, romantic attraction is usually characterized by heightened attention focusing on reward cues, boundless energetic pursuit (paired with nor-epinephrine) and persistent preoccupation of thoughts and emotions about the beloved. Apart from dopamine, neuropeptides such as oxytocin and vasopressin also facilitate social bonding to support a long-term stable relationship and opioids provide pain relief or pleasure (Calderone et al., 2024).

Even though these mechanisms are evolutionarily adaptive, they are also quite sensitive to reinforcement variability (diverse and new responses are rewarded). Dysregulatory experiences such as rejection, inconsistency or emotional uncertainty would amplify the anticipation of rewards and stress-related neural responses, further increasing the emotional volatility and compulsive relational focus (Fisher et al., 2016; Burkett & Young, 2012).

Behavioral and neurobiological parallels between romantic attachment and addiction further support this interpretation, as repeated activation of the reward circuits reinforces attachment behaviours and increases reliance on external relational validation for emotional regulation by individuals with insecure attachment styles. Romantic attachment and addiction share common dopaminergic pathways implicated in reward prediction, motivational salience and reinforcement learning which explain the intensity and persistence of attachment-related behaviors. Romantic attachment can produce both highly intense positive affect and very significant distress in response to loss, separation, rejection or relationship instability.

Attachment theory contextualizes the risk to these maladaptive relational patterns wherein the individuals with insecure attachment styles (particularly anxious-attachment) often demonstrate more sensitivity to rejection, are overly reassurance-seeking and emotionally dependent (Bowlby, 1982). Therefore, romantic relationships become their primary sources of emotional regulation,

increasing the vulnerability to compulsive attachment dynamics and dysregulated reinforcement cycles.

Nevertheless, framing love solely as an addiction requires caution since romantic attachment is evolutionarily adaptive and cannot be reduced entirely to a pathological disorder. A continuum model provides a more accurately nuanced representation, in which positive forms of romantic attachment are associated with mutual reinforcement, emotional safety and psychological well-being, and the negative forms involve compulsive dependence and impaired emotional regulation. The distinction between healthy and dysregulated attachment depends less on the reward activation system itself than on the extent to which emotional responses and neural activity are effectively modulated.

The Role of Mindfulness

Mindfulness is the technique of non-judgmentally paying attention to the present-moment experience, and is found to improve emotional regulation and reduce psychological distress. Neuroimaging research indicates that regular practice of mindfulness is linked to higher activation of the prefrontal cortex, anterior cingulate cortex and insula as well as nominal activation in amygdala which is responsible for increased emotional reactivity (Calderone et al., 2024).

The associated neural changes demonstrate the enhanced top-down regulatory control in the individuals practicing mindfulness with greater capacity to process emotional experiences without immediate impulsivity or behavioural reactivity. Particularly in the context of romantic relationships, mindfulness has been linked to lower levels of attachment anxiety and avoidance, that is mediated by improved emotional regulation (Ng et al., 2024).

Moreover, mindfulness does not suppress the emotional affect of the perceived experience. Instead, it alters the individual's relationship to internal states by promoting observation without over-identification. This reduces the likelihood of automatic responses driven by emotional intensity, which are central to maladaptive attachment patterns.

The Neuromodulation of Love through Mindfulness

Mindfulness can be conceptualized as influencing the interaction between cortical regulatory systems and subcortical reward circuits. Increased activity in prefrontal regions is associated with greater regulation of dopaminergic pathways, including those involving the ventral tegmental area and caudate nucleus. This suggests a mechanism through which mindfulness may alter reward processing (Hölzel et al., 2011; Tang et al., 2015).

One effect of this modulation is a reduction in compulsive craving. Mindfulness reduces the automatic behavioral responses to the reward signals which continue to be produced, which lowers the dependence on external sources of emotional reinforcement (Chandiramani, 2007). It also enhances interoceptive awareness, allowing individuals to recognize and effectively regulate emotional states while reducing rumination and repetitive thought patterns that are found in negatively addictive attachment and compulsive relational behaviour (Ng et al., 2024).

In addition, mindfulness reduces stress reactivity that attenuates withdrawal-like responses during relationship issues (Calderone et al., 2024). However, direct causal evidence which specifically links mindfulness within romantic contexts to changes in dopaminergic circuits remains limited. Most findings are inferred from wider research on mindfulness, emotional regulation and addiction-related treatment, and further scientific investigation is needed to demonstrate the working of these specific mechanisms.

Discussion: From Addiction to Awareness

The evidence reviewed supports a model in which romantic love engages neural systems associated with reward, motivational salience and reinforcement, producing behavioral patterns similar to addiction (Fisher et al., 2016; Burkett & Young, 2012). Simultaneously, unlike pathological addiction, romantic attachment also serves as an adaptive evolutionary function by facilitating pair bonding and emotional connection.

Mindfulness introduces an important regulatory dimension within the continuum model of romantic love by altering the processing of reward-related signals. By improving emotional regulation, interoceptive awareness and top-down prefrontal control, mindfulness reduces the automatic reactions to the emotionally-charged experiences (Hölzel et al., 2011; Tang et al., 2015). Without destroying the desire, suppressing attachment or reducing the emotional intensity towards the attachment figure, mindfulness seems to promote higher reflective awareness and controlled engagement. It allows the individuals to experience emotional closeness without developing compulsive dependence or any reinforcement-driven attachment patterns. In adaptive contexts, mindfulness enhances the quality of the relationship by increasing the emotional presence, stability and regulation of experiences. While in the maladaptive contexts, it helps to reduce compulsive attachment, emotional dysregulation and attachment-anxiety by enhancing the moderating variables (Ng et al., 2024; Pepping et al., 2013).

Though, there are some limitations to the current analysis since most of the existing literature is based on correlational designs and self-report measures, which makes it hard to make objective and causal claims. Similarly, neural findings do not establish direct causal links between the mindfulness practice and changes in the reward system. Additionally, conceptualizing romantic love through the lens of addiction framework risks reductionism by not taking into account other social, developmental and cultural influences on interpersonal interactions.

Future research should focus on integrating neuroimaging, behavioural, experimental and longitudinal methodologies while examining how mindfulness interventions influence both neural activity and relationship outcomes. Investigating individual differences like attachment styles and capacity for emotional regulation will provide greater specificity to understand what makes some individuals more vulnerable to maladaptive forms of romantic attachment than the others.

Conclusion

Romantic love and addiction share a biological pathway within the dopaminergic reward system that provide similar properties of intensity, motivational salience and reinforcement (Fisher et al., 2016; Burkett & Young, 2012). The neural mechanisms allow us to form social attachments and adaptive bonding, but romantic rejections, inconsistent and unstable relationships can lead to emotional dysregulation, compulsive dependence and destructive behaviour.

Mindfulness acts as a potential regulatory mechanism by enhancing top-down control, emotional regulation and interoceptive awareness (Hölzel et al., 2011; Tang et al., 2015). Although present evidence remains limited, the proposed framework suggests that mindfulness can shift romantic attachment from a compulsive reinforcement-driven pattern towards a more consciously adaptive and regulated relational engagement. Its regulatory function highlights the significance of harmonious balance in shaping the experience of love and in providing a foundational basis for further empirical exploration and interdisciplinary research in the future.

AI Contribution Statement

While writing the initial draft of this paper on 23 March 2026, I used ChatGPT to help refine the language, improve the sentence structure and strengthen the articulation of certain arguments related to attachment theory and the neuromodulatory mechanism of mindfulness.The prompts included requests to improve the clarity and scientific phrasing of certain ideas and sentences I had already outlined.

I used AI to help refine and restructure the paragraph discussing how anxious attachment may increase vulnerability to compulsive relational patterns, as visible in Section 2 (“The Neurobiology of Romantic Love as Addiction”), particularly connecting insecure attachment styles’s reassurance-seeking behaviour with emotional regulation. In Section 4 (“The Neuromodulation of Love through Mindfulness”), ChatGPT improved the phrasing of explanations concerning prefrontal control of dopaminergic reward pathways and mindfulness changing emotional reactivity.

During revisions on 17 April 2026, I used ChatGPT to coherently consolidate examples and reorganise key points regarding the limitations and future directions of conceptualising romantic love through an addiction framework as reflected in the “Discussion” section.

All the arguments, synthesis of literature, interpretation of sources, critical analysis and revised wording were independently rewritten, modified and edited by me after reviewing the AI-generated responses without being copied verbatim into the final paper. No AI tools other than ChatGPT for language refinement were used at any stage of this paper.

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Applied Inquiry and Intervention

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

Communication Beyond Orality

Rashee

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Introduction

This paper proposes an intervention design in the form of a curriculum to help children understand that communication is more than speaking and listening. It introduces the idea that we can use many different ways to communicate, recognise, and respond to emotions even without words. When we communicate across these differences, we also learn to read and respond to each other's emotions. This helps create an environment where no one feels segregated.

Studies show that children with hearing impairments often face challenges in participating in play that supports cognitive and emotional development, particularly in mainstream or integrated settings. For instance, DHH showed similar levels of social engagement as their hearing peers, but participated less in cooperative and linguistically rich forms of play (Antia & Dittillo, 1998). Even when DHH children use spoken language and benefit from cochlear implants, their play behaviour tends to shift toward physical or constructive activities that require less verbal exchange, suggesting persistent barriers to social inclusion in settings dominated by hearing peers (Da Silva et al., 2022). These patterns indicate that while integration may provide opportunities for interaction, it does not guarantee equal access to the deeper social and communicative aspects of play. Together, these findings highlight the need for inclusive practices that intentionally support multimodal, accessible forms of peer interaction.

Research suggests that hearing children exposed to sign language may gain cognitive benefits, particularly in visual-spatial reasoning and dual attention (Capirci et al., 1998). Exposure to alternative communication systems like sign language can foster flexible thinking and greater sensitivity to nonverbal cues. While some reviews note the limited empirical data supporting these benefits, existing findings indicate that inclusive settings can promote new ways of seeing and interacting with the world (Nelson et al., 2012).

Bringing together hearing and DHH children in an inclusive school is not sufficient to address the root cause of stereotypes. They are deeply embedded in our society, for instance, 'tone deaf' is often used as slang to call someone ignorant and someone who can't get social cues (Udayavani, 2020). This blatant and latent ignorance often reinforces stereotypes like: 'they are selfish'. This ignores the needs of those who can't hear, often substituting inclusivity with negligence and expectations to learn the hearing culture.

There are clear differences in the communication styles of hearing and DHH (Rehabilitation Council of India, 2023). For example, in Deaf spaces, it's important to have clear visual contact, use hand gestures, and pay attention to body language. But many hearing people don't recognise sign language as a valid way of interacting (Bernard Luksich, 2016).

This intervention is developed acknowledging the potential for developing sensitivity early on and later extending into the social interactions beyond class settings. Children need to develop empathy for each other, and that requires the development of a curriculum that helps in building communication skills beyond what is oral. So, children should be taught to interpret using tone of voice, gesture, implied meaning, as well as context and situation. Thus, high context cultures like the deaf culture require learning to use the situation, messages, and cultural norms (Rehabilitation Council of India, 2023). This class will be a part of the larger curriculum for an inclusive class comprising hearing and DHH children (see Appendix D). In this class, emotion recognition and related gestures will also be taught.

Using Theories of Developmental Psychology for Effective Teaching

This intervention builds from the works of cognitive development theorists, who help situate the capabilities of young school children and provide ideas for achieving various developmental milestones. According to Piaget, children in the Concrete Operational Stage (typically 7–11 years) begin to think logically about concrete events and develop perspective-taking skills. While some Grade 5 children may be transitioning to formal operations, the higher age margin ensures that all children, especially DHH students, who may experience developmental delays due to reduced language exposure, are developmentally ready for structured, tangible tasks. This activity supports their stage by using emotion and situation cards, colour-coded cues, and silent enactments to anchor abstract ideas

like emotion recognition in visible, rule-based formats. The LEGO game also fits this developmental need for categorisation and hands-on logic.

Design for ground rules and reward system follows Kohlberg's moral development theory. This theory explains that moral reasoning develops in six distinct stages which begin with a heteronomous understanding of morality where obedience occurs to avoid punishment on deviation from fixed rules, and ends with the last stage of reasoning which is grounded in universal ethical principles and inner conscience. Usually, during middle childhood, "Good Boy/Good Girl" morality or third stage of reasoning becomes prominent as children begin to seek approval and avoid disapproval (Colby et al., 1983). Star-based rewards like "Respectful," "Friendly," and "Smarty" reinforce prosocial behaviour, while consequences like presenting a story through gestures promote accountability without punishment. Gilligan (1982) and Pandya et al. (2021) suggest that children, especially those from higher SES backgrounds, often reason using autonomy rather than concern for others. The activities also promote empathy, active listening, and nonverbal collaboration, encouraging relational reasoning across communication differences.

The element of play in this intervention helps children feel seen as competent among peers by inviting recognition, participation, and collaboration. Erikson's Industry versus Inferiority stage, typically during the school period, requires a child to focus and act on tasks that are seen as valuable by others, like parents, teachers, and peers. Any failure to develop this sense of industry, like when adults call performance inadequate or wrong, can cause children to feel inferior (Sollod et al., 2017, pp. 226–262). For DHH students, being able to lead or perform successfully directly helps promote feelings of competence, a stronger self-concept, and a sense of belonging. For hearing students, witnessing DHH peers take initiative challenges internalised biases and fosters inclusive thinking.

Vygotsky's ideas of cognitive development are actively used in both activities through peer collaboration, structured support, and multimodal communication (van der Veer, 2020). In Activity 1, students operate within their Zone of Proximal Development (ZPD), i.e, the gap in child's performance when working by themselves and when working under guidance. So, the task of building a Lego model without seeing it challenges them and helps them grow beyond what they can achieve on their own. Hearing and DHH students are paired to ensure shared reliance: the hearing child describes the model using gestures or up to three written words, while the DHH child interprets and builds. Facilitators initially circulate, offering interactive scaffolding (or the way in which the teachers provide help to learners based on their needs) where they model gestures, verbalise their thought process, or step in briefly when students are stuck, but step back once pairs begin to co-construct strategies. This scaffolding fades as students internalise ways to collaborate and innovate within their constraints. In Activity 2, students draw cards to enact emotions and contexts without speech while peers guess the emotion and scenario.

ZPD is functional in interpreting emotions without verbal cues, stretches most students' abilities, but can become possible through peer modelling and facilitator-led demonstrations that occur before the task. These enactments help students notice how emotions can be conveyed using expressions and gestures alone. While students don't teach each other directly, they learn by switching expressive and interpretive roles, observing each other's strategies, and adjusting accordingly. The reflection session encourages metacognitive thinking (or thinking about thinking) and scaffolding around misunderstandings or emotional cues missed, prompting children to articulate what others may have felt or intended. While young children may not yet possess fully developed metacognitive skills, providing opportunities to 'select strategies that worked for them and discuss why' encourages the kind of exploratory, self-directed learning often limited in deaf education settings (Moores & Martin, 2006).

Non-verbally deaf and hearing children are equally intelligent with similar cognitive potential. But deaf children may experience delays in theory of mind (or understanding other's attitude, words, and behaviour in daily life; ToM), which could be due to delayed language exposure or if the critical period for theory of mind development is missed (Peterson et al., 2016). Deaf students often rely more on item-specific rather than relational processing and show difficulty in integrating multiple dimensions of a task simultaneously, patterns shaped in part by directive instructional approaches and reduced opportunities for exploratory problem solving (Moores & Martin, 2006). I designed each segment of the session to support the development of ToM and empathy, especially considering the known delays in ToM among deaf children due to reduced early conversational exposure (Jones et al., 2015). In the introduction, the myth-busting task positions deaf children as evaluators, giving them an opportunity to engage in perspective-checking, while hearing children practice taking the perspective of a peer with a different lived experience.

Activity 1, the guessing game, requires both partners to infer intent, interpret incomplete cues, and rely on perspective-taking (or how one situation can be experienced cognitively and emotionally from another person's perspective), all of which are directly tied to false belief understanding (or understanding that other people can believe things that are unreal) and ToM. Activity 2, centred on emotional enactment, involves the sending and receiving of affect, pushing both deaf and hearing children to recognise and simulate emotional states without relying on spoken cues, reinforcing shared vocabulary through body language. Finally, the gesture only homework task for those who didn't follow ground rules becomes a form of role reversal as it places hearing children in the communicative position that deaf peers often navigate, reinforcing ToM through speech constraint rather than punitive isolation.

Intervention Design

This class is designed specifically for children who can hear and are deaf or hard of hearing (DHH), studying in Grade 5 (10-11 years old) at a Co-ed Inclusive School. The school should be a private school in an urban area. It can be presumed from the high fees in urban privatised school that the majority of children are from families of middle to upper socioeconomic status (SES).

The assumption is that they are well-versed in the English language (written) to their specific elementary level and can read, write, and understand basic English words. Teaching will be facilitated with the help of a teacher who understands the sign language and lip-reading abilities of DHH children. Since children may not know how to take the help of an interpreter, due to the individual

differences of personal interpreters and differences in sign language development, the class teacher would be better suited for this group communication and facilitation. The class should be a small group of 12-20 students (evenly divided into two groups). It would also be convenient in facilitation to have DHH students' access to cochlear implants.

Class Composition and Seating Arrangement

The class should be conducted in a small group of half hearing and half DHH children to give the personal attention required to each child. They should be seated in a U-shape single row structure, such that they can see each other, the facilitators, and the presentation screen.

Introduction (10 minutes)

The class will begin with rapport building and a small myths-busting session related to stereotypes of hearing impairment (see Appendix A). After each round, the teaching facilitator and I will explain why the statement is true or false. Before beginning, writing pads will be given to the class, and the ground rules will be established as follows:

1. Raise your hands whenever you want to give the answer or ask a question.
2. Only the person who has the mic can answer the question at a time.
3. We will try to respect everyone's perspective. Please be patient while someone is expressing their opinions. If something is difficult to understand, please ask for clarification from the instructor.
4. Be patient, retry, and rephrase how you are communicating.
5. Tap gently on the shoulder to get someone's attention.

Signs for basic turn-taking (raising hand to speak and gently tapping on the shoulder to get attention) and respect (please, sorry, thank you) will also be explained (Atmarthy Samiksha, 2018).

A stars collection system will determine the following tags:

1. Respectful: Earn 1 star per activity for following the ground rules.
2. Friendly: Given when helping a peer who's stuck or unsure.
3. Smarty: Awarded to the one who answers fastest in each activity.

Ice-Breaker Activity (15 minutes)

Each hearing student is paired with a DHH child. The hearing student is provided with an illustration of a Lego model, while the DHH student is required to rebuild the model solely with instructions given to them by the former (see Appendix B). The hearing student is permitted to use three modes of communication—gestures, signs, and if absolutely necessary, a maximum of three words written on a pad. Hearing students firsthand experience the frustration of communicating without orality, and therefore, the primary objective of this activity is for both students to regulate their emotions, built trust, and collaborate.

Additionally, a brief reflection circle, facilitated by prompt sheets, can be conducted after to understand individual gaps in communication or understanding.

"Act It Out" Activity (35 minutes)

In this activity, students will be provided with two decks of cards—one consisting of the six universal emotions (joy, fear, sadness, anger, disgust, and surprise) (see Appendix C), and the other consisting thirty contextually different circumstances, categorised and colour-coded under the six emotions. Before the activity begins, the facilitators will demonstrate how each emotion is enacted.

Then, students begin the activity in the same pairs as the previous one. The first student draws an emotion card from the first deck, while the other draws a context card corresponding to that emotion from the second deck. Together, they enact the emotion and the situation in front of the entire class, while their peers note down their respective guesses in their notebooks.

After all pairs complete their performance, students randomly exchange their notebooks among each other and grade their peers' responses based on a provided answer key. Students with the correct answers are called upon to elaborate on how they came to that conclusion, while students who got the wrong answer are also prompted to understand the specific cues they noticed. Each pair also takes turns to discuss the difficulties they experienced, and their observations about their partner's body language.

Closing Note and Homework Assignment (5 minutes)

As the class concludes, the facilitators lay additional emphasis on the importance of understanding another individual's emotions without speech. As a take-home assignment, students will be assigned the task to read Julia Donaldson's "Freddie and the Fairy", an illustrated children's book (BookXplore - Read Aloud Children book, 2018). Additionally, students who obtained fewer than three stars may be asked to narrate it using only gestures and signs in the following class.

Discussion

This paper explored the existing differences in communication styles of hearing and DHH children, barriers in integrating the two groups of students in inclusive classrooms and reviewed potential social, emotional and cognitive benefits from effective collaboration between the two groups. Building on existing literature on barriers to effective inclusion and integration of DHH children in classrooms, as well as developmental psychology theories, the aim was to demonstrate a class and, following that, a curriculum design for social-emotional learning and helping the two groups communicate.

However, there are a few limitations to this proposition. Despite growing recognition of Integrated Education, 95% of Children with Special Needs remain outside mainstream schools, with poor infrastructure and insufficient teacher training (Patra, n.d.). This could impact the result and efficacy of the intervention itself. Therefore, it is suggested that before an integration proceeds, teaching staff be adequately trained in the subject matter.

While integration is the primary goal, there are limitations to it with respect to preexisting knowledge and skills. Any integration should acknowledge that the benefits of it are bidirectional, i.e., impact both groups, hearing and DHH. Accommodating severe hearing loss in a mixed modal class can be difficult and may be inappropriate, given that the intervention proposed requires optimal language development for both hearing and DHH children.

This intervention also requires time and patience to reap the proposed benefits. Additionally, deaf children may also feel self-conscious due to discussions on their abilities and different needs,

which may make them more distant and reluctant to participate. These requirements are more engagement-oriented, participatory facilitation of the class. Communicating to both hearing and deaf at the same time may require more than one co-facilitator or teaching assistant to be present during the class, so that each child feels included and is paid attention to. Such a curriculum could be planned once or twice a week or before the official school day begins (often termed as "zero-period"). This would ensure that the academic curriculum is not disrupted.

Differences in the basic development of English language writing skills are also expected. In practical settings, language gaps are more common than not between hearing and DHH children. This intervention presumes education facilities since preschool, which is a vital language developmental stage for deaf children. Therefore, it may not be effective in student populations from lower socioeconomic backgrounds who may lack the means of English written communication.

Conclusion

There's a rising need for inclusive education and Social Emotional Learning curriculum for deaf students. This is necessary not just for emotion regulation and communication, but for better life outcomes through better assimilation, confidence in navigating social circumstances beyond home, class, and similar identity groups. There is a rarity of psychologists who can sign and understand their needs. This makes it important to build resilience in deaf children from the beginning through social emotional learning to prevent mental health disorders and improve intellectual development. According to the World Health Organisation (2023), India accommodates the world's largest deaf community with over 63 million people suffering from an auditory impairment amongst 1.5 billion people worldwide with hearing loss. Therefore, cannot remain silent on the issues concerning their development.

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Appendix

Appendix A

Myth-Busting Statements

1. DHH children can't enjoy music classes
2. You have to shout really loudly for a DHH friend to understand you
3. You need glasses to lip-read
4. If someone wears hearing aids, they can hear everything perfectly
5. All DHH kids are really good at charades!

Appendix B

Figure B1 *Model for block building (Brickset, 2025a)*

Figure B2 *Models for block building (Brickset, 2025b)*

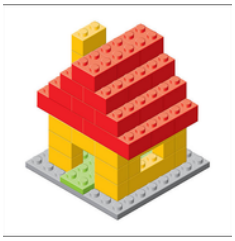

Figure B3 *Model for block building (Simple Plastic Brick Toy House, 2025)*

Appendix C

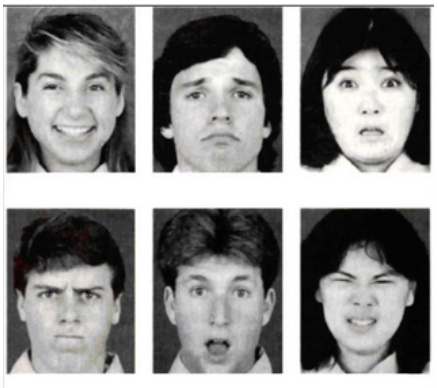

Figure C1: *Universal 6 Emotions*

Note: Starting from the top row, right to left: joy, sadness, fear, anger, surprise, disgust (Sunil Bhutada et al., 2024)

Appendix D

Table D1: *BRIDGE: Curriculum for Building Relationships, Inclusion, and Growth through Diverse Expressions between hearing and DHH children.*

	What	How	Learning Outcome
B	Bonding through teamwork	Enabling play	Fosters trust, shared goals, and distributes power irrespective of ability. Provides a means to enable social interactions beyond the classroom.
R	Recognising Emotions	Enactment	Develops the ability to identify, express, and respond to emotions.

I	Interpreting Ambivalent Situations	Drama, Storytelling	Understanding context and intent in body language, facial expressions for complex expressions like envy, malice, etc.
D	Dismantling Stereotypes	Stories	Understanding context and biases around ability and disability. Education on deaf culture and identity.
G	Gestures and Basic Sign Language	Daily Learnings	Hearing children learn basic sign language required for day-to-day interactions. Non-hearing children become their teachers and learn to take pride in their language.
E	Encourage and Enthusiasm	Creative Synthesis	Innovate using their diverse abilities while appreciating each other's value.

Lab Reviews

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

Ashoka Psychology Review, 2026, 25-27

Lab Review

ASHOKA PSYCHOLOGY REVIEW: LAB REVIEWS

A pilot randomized controlled trial of AI-delivered vs. human-delivered iCBT for depression in young adults: A Review

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Original Paper: Wu, Yiyang, et al. "A Pilot Randomized Controlled Trial of AI-Delivered vs. Human-Delivered ICBT for Depression in Young Adults." *BMC Psychiatry*, vol. 26, no. 1, 24 Feb. 2026, pmc.ncbi.nlm.nih.gov/articles/PMC12988633/, https://doi.org/10.1186/s12888-026-07925-1

Introduction

Given the global prevalence of depression, a standardized therapeutic model like Cognitive Behavioural Therapy (CBT) has demonstrated massive efficacy in treating this mental illness. However, since it is heavily dependent on the psychotherapist's technique and involvement, affordability, extended treatment duration, and patient-level constraints remain significant limitations in administering CBT, which ultimately hinder the overall effectiveness of the treatment.

To address these limitations, the paper emphasises the benefits of internet-based CBT, which delivers CBT modules through online platforms using text, videos, or interactive exercises. While iCBT is cost-effective, versatile, and demonstrates therapeutic benefits in various settings due to its accessibility, it is not without limitations. The paper thus aims to explore the overall effectiveness of iCBT measures in addressing individual needs and symptom severity. It extends previous research by Karyotaki et al. (2021), which found that guided iCBT measures produced greater short-term benefits, by exploring how unguided iCBT measures, such as AI-based interventions, compare.

Using examples of previously tested AI bots like Woebot or Healthy Moms, which were created to provide automated psychological support, the paper emphasises the efficacy of AI-powered iCBT in overcoming the challenges of standardized iCBT. Recent developments like Large Language Models (LLMs) further expand language-processing abilities, where iCBT models can understand, respond to, and converse with the user, emulating the role of an involved therapist. The paper highlights the advantages of LLMs in mitigating the limitations of in-person CBT and earlier forms of iCBT.

Hypothesis

The authors hypothesise that AI-driven iCBT measures would score higher in their efficacy in reducing depressive symptoms and suicidal ideation compared to traditional therapist-administered CBT. Since AI-driven iCBT can overcome logistical limitations and human biases in administering CBT, the authors explore its benefits and scope for future developments in iCBT measures. They also delve into the experiences of young adults receiving iCBT and their perceptions of the two different modalities, weighing their scope for development and limitations.

The qualitative aim of understanding users' experiences of both iCBT modalities adds useful depth, signalling a mixed-methods or process-evaluation component that strengthens the overall design. However, for a randomized control trial, the hypothesis is unidirectional, as it explores comparative effectiveness rather than including a balanced comparison between conditions.

Methodology

The study design is ambitious in comparing an AI chatbot to human counsellors while keeping participants blind to which modality they were receiving, and here the authors largely succeeded. The stratified randomization by PHQ-9 scores is an effective way, among the other measures adopted, to ensure a genuinely randomized trial. The blinding procedure is a creative aspect of the design, since none of the participants could successfully report suspecting a human counsellor conducting the intervention at any point. However, the validity of this check is worth questioning. Since participants were asked about their suspicions only after completing four weeks of intervention, when they had already invested significant time and may have been less inclined to critically analyse their experience retrospectively, a mid-intervention check or a more indirect measure of perceived modality might have strengthened this finding.

Moreover, as emphasised earlier, having the peer counsellors mimic the conditions of the AI-driven intervention raises the question of whether it takes away from testing how features like 24/7 accessibility in AI-driven iCBT influence the effectiveness of the measures.

The sample size of 90 participants, with 30 participants per group, is modest. The authors powered the study at f = 0.30, citing moderate-to-large effect sizes in prior iCBT research, which is a reasonable basis. However, small group sizes increase the risk that findings are sensitive to individual variation, and the results should be interpreted with that limitation in mind. The instruments used — PHQ-9, BSI-CV, and GSE — are all validated and widely used, including in Chinese populations, which is appropriate given the study context.

Overall, the methods reflect a thoughtful attempt to isolate the effects of modality type and administration in a way that is difficult to achieve with precision. The core limitations, such as the deception procedure and modest sample size, are worth noting, but they do not fatally undermine the study's contribution.

Results

The primary outcome — depressive symptoms measured via the PHQ-9 — is reported clearly and with appropriate statistical detail. The use of repeated-measures ANOVA with Bonferroni-corrected post hoc comparisons is suitable for the design, and the reporting of both *p*-values and effect sizes (partial η^2 and Cohen's *d*) reflects good practice that aids interpretability. The central finding, that both intervention groups outperformed the waitlist control by week 2 but diverged thereafter — with the AI group plateauing and the human group continuing to improve — comes through clearly and is well supported by the within-group analyses.

However, the self-efficacy (GSES) findings receive noticeably less attention than their complexity warrants. The authors identify a significant Time × Group interaction and note a rise-then-fall pattern in the AI group's scores between weeks 2 and 4, but this trajectory is only briefly acknowledged and then set aside rather than meaningfully explored. A decline in self-efficacy following an initial boost is a clinically relevant finding in the context of CBT, where building a sense of personal competence is a core therapeutic goal, and therefore deserves more than a passing reference.

A minor but unexplained gap also appears in Table 1, where the Participant Expectation Questionnaire (PEQ) data is provided for the AI and Human groups but not for the Control Group. Given that the PEQ was included specifically to control for expectation-related confounding, this omission should be addressed.

Discussion

The discussion makes its strongest contribution by linking the plateau effect observed in the AI group's depression scores to the qualitative finding that participants found the chatbot's responses formulaic and emotionally unresponsive. This connection between user experience and quantitative outcome trajectory is the most interesting argument in the paper and is reasonably well developed.
That said, the discussion tends to overstate what the data can actually support. The authors introduce terms such as "AI-related distress" and "digital alienation" without citing established literature that defines these concepts, presenting them as though they are recognized clinical phenomena rather than interpretative labels generated from their own qualitative data. In a research paper, this distinction matters, and these ideas should be explicitly framed as symptom disorder, and sexual dysfunction where connections are emerging observations from the current dataset rather than established risks.

Similarly, the conclusion that the findings reveal something fundamental about AI's limitations in therapeutic contexts is broader than the study's design can justify. The AI used here was GPT-3.5, a model that is already several generations behind what is currently available, delivered through a text-only platform over just four weeks. Whether these findings generalize to more advanced AI systems or longer intervention periods remains an open question that the authors do not adequately engage with.

The discussion also misses an opportunity to connect the qualitative themes — particularly participants' descriptions of feeling heard versus feeling processed — to the well-established therapeutic alliance literature in CBT research. These accounts map naturally onto concepts like the relational bond between therapist and client, and grounding them in existing theory would have considerably strengthened the discussion's theoretical contribution.

Conclusion

The conclusion appropriately positions AI-iCBT as a promising short-term supplementary tool rather than a straightforward replacement for human-delivered therapy, which is a reasonable and measured takeaway from the data. The emphasis on accessibility as a meaningful advantage for individuals who might not otherwise seek support is a valuable and clinically grounded point.

However, the conclusion reads as somewhat more confident than a 90-participant pilot trial warrants. Characterising AI-iCBT as demonstrating "comparable effectiveness to human-therapist-delivered iCBT only in the initial stages" presents what is essentially a preliminary finding as more settled than it is. The language should better reflect the exploratory nature of the trial and acknowledge that replication with larger and more diverse samples is needed before drawing firm comparative conclusions.

It is also worth noting that the conclusion makes no mention of the self-efficacy findings, despite self-efficacy being a theoretically central mechanism in CBT. Its omission leaves the conclusion feeling incomplete. Finally, the future directions offered — longer follow-up periods, more diverse samples, and different AI models — are sensible but fairly generic. More targeted suggestions, such as directly comparing different generations of AI models under identical conditions, would have added more specific value to the field.

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Ashoka Psychology Review, 2025, 28-31

Lab Review

ASHOKA PSYCHOLOGY REVIEW: LAB REVIEWS

Intentional Discontinuation of Psychostimulants Used to Treat ADHD in Youth: A Review and Analysis: A Review

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Original Paper: Lohr, W. D., Wanta, J. W., Baker, M., Grudnikoff, E., Morgan, W., Chhabra, D. & Lee, T. (2021). Intentional Discontinuation of Psychostimulants Used to Treat ADHD in Youth: A Review and Analysis. Frontiers in Psychiatry: Child and Adolescent Psychiatry, 12, Article 642798. https://doi.org/10.3389/fpsyt.2021.642798

Introduction

Psychostimulants have long been used to treat symptoms of Attention Deficit Hyperactivity Disorder (ADHD), a neurodevelopmental condition that often persists from childhood into adulthood. The prescription of stimulants for ADHD and other "behavioral problems" began in the 1930s with racemic amphetamine sulfate for small populations, with prescriptions of methylphenidate and amphetamine/dextroamphetamine booming in the 1990s (Mayes et al., 2008). While research on ADHD pharmacotherapy is mostly short-term, with some RCTs spanning beyond a year, and the efficacy of psychostimulants is well documented, research on the duration and discontinuation of treatment remains relatively underexplored (Lohr et al., 2021).

This is despite the fact that discontinuation does occur; while stimulant discontinuation was first observed in geriatric populations, the growing number of child and adolescent psychostimulant prescriptions has raised concerns such as safety, polypharmacy due to comorbidities with ADHD, changing patient needs, and adverse effects, which may lead psychiatrists and patients to consider discontinuation as well. Thus, it is this niche that Lohr et al., researchers from the United States, examined through their paper, attempting to create a reference point for practitioners whose youth clients may wish to discontinue medication for various reasons.

Methodology

The literature review was conducted through systematic searches across multiple databases: Cochrane CENTRAL, EMBASE, PsychInfo, and MEDLINE. The keywords were developed using the PICO framework — Population of interest (<18-year-olds), Intervention ("discontinuation," "deprescribing," and related synonyms), Comparator (continuation of specific medications), and Outcomes.

Ten reviewers screened the titles and abstracts of papers using a a single-reviewer system; at this stage, a single reviewer was allowed to include, exclude, or tag an article for a second review (in which case, two specific reviewers examined the title, journal, and abstract, and both reviewers had to agree on the inclusion or exclusion decision). While this was a highly objectionable move, it was implemented due to the large volume of articles.

The articles were then subjected to a full-text review, which also included reviewing references to identify further articles, which were subsequently added to the full-text review. Additional articles were also included through broader literature searches or suggestions from experts in the field.

There were three inclusion criteria, stated as follows:

- The topic of the article had to relate to provider-initiated deprescribing, discontinuation, tapering, withdrawal, or reduction of psychiatric medications. Studies focused solely on patient non-adherence were not included.
- This, too, is a possible limitation, as patient non-adherence is a reason for medication discontinuation, especially in the early stages (Briskell et al., 2024).
- The article had to include a psychotropic medication with behavioral health or mental health indications (excluding supplements and minerals). Medications with psychiatric indications (e.g., clonazepam) being studied for non-psychiatric reasons (e.g., seizures) were included if the outcome measure was pertinent to psychiatry (such as cognition), as opposed to purely neurological outcomes (such as seizure relapse).
- Finally, the population studied had to be under 18 years of age, or if the study spanned both youth and adult populations, the subset under 18 years of age had to be analyzed independently.

Thus, a total of 12,520 studies were identified through database searches and 75 through other sources. This was narrowed down to 755 through the first and second screenings, including the exclusion of duplicate studies (687). During the exclusion of full-text articles, 96 out of 130 records were excluded due to primary diagnoses other than ADHD, lack of focus on intentional discontinuation or withdrawal, or emphasis on non-stimulants. This ultimately led to 34 studies being included in the final synthesis, with one additional study identified through reference review.

Results

The systematic search initially identified 12,520 citations, which were later narrowed down to 35 articles specifically examining intentional deprescribing, discontinuation, tapering, or withdrawal of stimulants in children and adolescents with ADHD. These consisted of 15 case reports, three clinical guidelines, two literature reviews, two observational studies, and 13 randomized controlled trials (RCTs). Although the breadth of literature appears reasonable, the large proportion of case reports is important to acknowledge, as such studies are inherently limited in terms of generalizability and are more susceptible to reporting bias.

The 13 RCTs formed the central basis of the review's findings. Seven of these studies examined the re-emergence of ADHD symptoms following discontinuation of stimulant monotherapy, and across them, a relatively consistent pattern emerged: most children experienced a rapid return of symptoms after stopping medication, often within the first two weeks. Coghill et al. (2014) and Gillberg et al. (1997) both found that participants switched to placebo showed significant deterioration in ADHD symptom ratings and quality-of-life measures, whereas participants who continued medication maintained the improvements achieved during the lead-in phase. In the lisdexamfetamine withdrawal study conducted by Coghill et al. (2014), treatment failure occurred in 67.5% of participants in the placebo group, compared to 15.8% in the continuation group, with a median time to treatment failure of 17 days. Similarly, Matthijssen et al. (2019), which the review identifies as the most recent and methodologically robust study, found that 40% of participants who discontinued methylphenidate worsened on the Clinical Global Impression scale, compared to 16% of those who continued treatment.

However, despite the overall trend toward relapse following discontinuation, one of the review's most clinically significant findings was that a substantial minority of youth did not deteriorate after stimulants were stopped. Across studies, this figure remained fairly consistent at approximately 30%. Matthijssen et al. (2019) identified a subgroup of participants who tolerated discontinuation without worsening of ADHD symptoms, while an earlier observational study by Sleator found that 11 out of 42 children, approximately 26%, showed no clinical deterioration after being switched to placebo for one month. Matthijssen et al. (2019) also reported that older adolescents, specifically those above the median age of 13.8 years, did not show statistically significant worsening after discontinuation. This raises the possibility that age-related neurological maturation may influence the likelihood of successful stimulant discontinuation.

Three RCTs examined whether non-pharmacological interventions, including cognitive training, attention control therapy, and multimodal psychosocial treatment, could reduce symptom re-emergence following stimulant withdrawal. None of these interventions were found to meaningfully facilitate successful discontinuation. In the Abikoff et al. (2004) study, all children relapsed after being switched to placebo despite receiving one year of multimodal psychosocial treatment, although those who received psychosocial intervention tolerated the placebo phase marginally longer on average. The clinical relevance of this difference, however, remains uncertain.

With regard to adverse effects, evidence from the RCTs suggested that discontinuation may alleviate certain stimulant-related side effects. Participants switched to placebo gained weight, whereas those who continued lisdexamfetamine maintained relatively stable weight patterns. Studies examining weekend and summer "drug holidays" also found modest improvements in growth trajectories and reductions in insomnia without significant worsening of ADHD symptoms at school. These findings support the practical use of structured short-term medication breaks for managing side effects, even when full discontinuation is not intended.

The case reports, although limited in scope and generalizability, provided clinically relevant detail regarding adverse outcomes following stimulant discontinuation. Four publications described acute dystonic reactions in children who discontinued stimulants while concurrently taking antipsychotics, with most reactions occurring within 33 hours of cessation. The proposed mechanism involved the removal of the dopaminergic counterbalance to antipsychotic-mediated receptor blockade. Additional case reports described muscle cramps, gastrointestinal withdrawal symptoms, migraines, and, in rare cases, psychiatric complications such as severe depression and psychotic presentations following abrupt discontinuation. While individually limited, these reports collectively highlight the importance of careful monitoring and gradual tapering, particularly in children receiving polypharmacy regimens.

Discussion

Lohr et al. (2021) contribute to a relatively underexplored area of the literature by synthesising findings from RCTs, observational studies, case reports, and clinical guidelines into a clinically relevant discussion regarding stimulant discontinuation in youth with ADHD. The central conclusion of the review is nuanced. Although stimulants remain clearly efficacious and most children experience symptom re-emergence following discontinuation, a meaningful minority, estimated at around 30%, may be able to discontinue treatment without relapse. This finding carries important implications in light of increasing concerns surrounding long-term stimulant exposure, growth suppression, and polypharmacy within child and adolescent psychiatry.

The authors acknowledge several methodological limitations within the available literature. A major concern is that many of the included RCTs were industry-sponsored and primarily designed to establish medication efficacy rather than address the clinical question of discontinuation itself. Participants in these studies frequently underwent extended lead-in periods of successful treatment before randomization, meaning the study populations may have consisted disproportionately of stable and medication-responsive individuals. In routine clinical settings, where patients present with greater variability in comorbidities, treatment responses, and adverse effects, discontinuation outcomes may differ considerably. This introduces an important selection bias and limits the direct applicability of findings to broader clinical populations.
Another limitation relates to the short duration of placebo phases across most RCTs. With the exception of Gillberg et al. (1997), which involved a comparatively long double-blind period, discontinuation phases generally lasted only two to six weeks. Since relapse in real-world settings may occur over longer periods, the

lrelapse rates reported within these studies may underestimate the true frequency of symptom recurrence following discontinuation. Conversely, the short placebo periods also make it difficult to distinguish between transient rebound effects and genuine relapse, a limitation acknowledged within the review itself.

The underrepresentation of females across study populations is another limitation noted by the authors. ADHD in girls and young women is increasingly recognized as differing in both presentation and clinical course, making it unclear whether discontinuation findings can be generalized across genders (Arnett et al., 2015). Similarly, although the review identifies racial and ethnic disparities in ADHD medication practices as an important clinical issue, the available studies did not permit analysis along these lines, leaving a significant gap.

The review process itself also presents certain limitations. Initial screening was conducted using a single-reviewer system due to the large volume of articles, creating the possibility that relevant studies may have been missed during the early stages of selection. The authors additionally note that the intended systematic review ultimately became more of a targeted review because of the heterogeneity and limited quantity of directly relevant literature available. The absence of standardized discontinuation protocols, along with inconsistencies in terminology and outcome measures across studies, further limits comparison between findings.

Despite these limitations, the review presents a strong argument for periodic and structured trials of stimulant discontinuation within routine clinical practice, a recommendation also reflected in guidelines from the American Academy of Child and Adolescent Psychiatry and the National Institute for Health and Care Excellence. The finding that most relapses occur within two weeks provides a practical framework for designing brief and clinically assessable discontinuation trials. The authors' recommendation of an initial short drug-free trial, followed, if necessary, by a longer placebo-controlled period, is grounded in the available evidence and offers a practical clinical approach. At the same time, the review highlights the need for further research examining predictors of successful discontinuation, optimal tapering strategies, and outcomes across more diverse and representative populations.

Conclusion

Lohr et al. (2021) offer a clinically grounded synthesis of a question that practitioners increasingly face but have had little formal guidance on. The review makes clear that while stimulant discontinuation will not be appropriate for all youth with ADHD, a meaningful subset may tolerate it without relapse, and periodic trials are therefore worth considering. Further research into which children are most likely to benefit from discontinuation, and how best to support the process, remains a necessary next step.

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Lab Review

ASHOKA PSYCHOLOGY REVIEW: LAB REVIEWS

The Effect of Sung Speech on Socio-Communicative Responsiveness in Children with Autism Spectrum Disorders: A Review

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Original Paper: Paul, A., Sharda, M., Menon, S., Arora, I., Kansal, N., Arora, K., & Singh, N. C. (2015). The effect of sung speech on socio-communicative responsiveness in children with autism spectrum disorders. Frontiers in Human Neuroscience, 9, 555. https://doi.org/10.3389/fnhum.2015.00555

Introduction

Difficulties in socio-communicative functioning are among the most widely documented features of Autism Spectrum Disorders. Behaviors such as joint attention, gaze following, social gesture, and reciprocal interaction are essential for typical development. Their disruption in ASD affects language learning, relationships, and educational participation. Most interventions therefore target these deficits through speech-based approaches, aiming to move communication closer to typical developmental patterns.

Paul et al. (2015) take a different approach by focusing on preserved abilities rather than deficits. Research has repeatedly shown that musical abilities in ASD are often intact, and sometimes enhanced, despite impairments in other cognitive or social domains. Children with ASD frequently show strong responses to music, good melodic memory, and sensitivity to emotional tone in music even when they struggle with facial emotion recognition. This suggests that autistic individuals are not uniformly unresponsive; instead, some communicative channels may remain especially accessible. Song may be one such channel.

Neuroimaging findings support this idea. Sharda et al. (2015), working in the same research group as Professor Singh, found that fronto-temporal connectivity disrupted during spoken language processing in ASD remained relatively intact when children listened to sung words. Similarly, Lai et al. (2012) showed that brain regions with reduced activation during speech displayed greater activation during song. These findings support observations long reported by parents and therapists: children who appear disengaged during ordinary conversation often become more attentive and responsive when the same content is sung. The study by Professor Singh and colleagues aimed to test whether this advantage could also produce measurable behavioral changes during therapeutic interaction.

Hypothesis

The authors predicted that sung instructions would act as a more effective communicative scaffold than spoken directives for young children with ASD. They expected higher frequencies of socio-communicative behaviors, particularly eye contact and social gesture, during sung sessions. They also predicted that the increased engagement associated with song would improve task performance, even though this was treated as a non-social measure.

Methods

Three male children participated, with a mean age of 3.36 years. All had formal ASD diagnoses confirmed through DSM-5 and ICD-10 criteria. Standardized assessments included the Childhood Autism Rating Scale (CARS-II), the Social Responsiveness Scale (SRS-2), and the Vineland Adaptive Behavior Scales (VABS-II). The participants represented different severity levels. Child A had mild-to-moderate autism with some functional language and joint attention abilities. Child B had severe autism, limited language, low joint attention, and frequent sensory dysregulation. Child C also had severe autism, was non-verbal, and showed minimal communicative intent.

The researchers used an adapted single-subject AB design in which each child served as their own control. This approach was chosen because ASD shows high variability across individuals, making group averages potentially misleading. Condition A involved spoken directives, while Condition B involved sung directives.

Each child completed 18 sessions across three months: nine spoken and nine sung. Sessions were randomized and counterbalanced across block matching, picture matching, and clay play activities. Each session lasted 3–4 minutes and took place at the Children First Mental Health Institute in New Delhi. During sessions, a therapist sat across from the child while another caregiver recorded the interaction on video.

The spoken and sung conditions used identical verbal content,

including phrases such as “Hello,” “Look at me,” and “Let’s play with blocks.” The only difference was intonation. Spectrographic analysis confirmed acoustic differences between the two conditions, ensuring that any behavioral changes were due to the musical quality of the directives rather than changes in meaning.

Three behavioral measures were coded from the recordings. Performance measured the percentage of correct responses to instructions and served as a non-social measure of engagement. Social gestures measured responses to greeting gestures such as “hi five.” Eye contact measured how often the child looked at the therapist after hearing their name. A second independent rater coded 30% of the videos blind to the study’s purpose. Cohen’s Kappa values showed substantial agreement for eye contact ($\kappa = 0.69$) and social gesture ($\kappa = 0.70$), and near-perfect agreement for performance ($\kappa = 0.82$).

Results

All three participants showed higher scores in the sung condition across the behavioral measures. For task performance, Child A showed the clearest improvement, averaging about 78% correct responses in sung sessions compared to 48% in spoken sessions. Children B and C showed smaller and more variable gains.

For social gesture, Child A improved from 77% in spoken sessions to about 89% in sung sessions, while Child C improved from 41% to 60%. Child B showed very high scores in both conditions, making differences harder to detect.

Eye contact also improved in the sung condition. Child A increased from 38% in spoken sessions to 62% in sung sessions. Child B increased from around 7.5% to 34%, though with high variability. Child C improved from 24% to 33%.

Visual inspection across sessions confirmed these patterns. Sung sessions were usually equal to or better than spoken sessions across all measures. Difference-score analysis showed that Child B, who had relatively stronger socialization scores on standardized tests, responded especially well to sung directives. However, Child C, despite lower standardized scores, also showed meaningful improvements in eye contact and social gesture. The authors considered this important because it suggests song-based interventions may help children across different functioning levels.

Discussion

The findings support the hypothesis that sung directives can improve socio-communicative responsiveness in young children with ASD. Importantly, improvements were not limited to explicitly social behaviors but also appeared in task performance. This suggests that song may increase overall attention and engagement rather than affecting only one behavioral domain.

Professor Singh and her co-authors linked these behavioral findings to earlier neuroimaging work by Sharda et al. (2015) and Lai et al. (2012). Preserved fronto-temporal connectivity during song processing may explain why sung directives are more effective. Instead of relying on a communication pathway that may be neurologically disrupted, song appears to use pathways that remain functional. This reframes ASD intervention from focusing only on deficits toward working through preserved strengths.

The study also has important practical implications. Sung directives require no specialized equipment and can easily be adapted for homes, classrooms, and clinics. Parents, teachers, and therapists could potentially use them without extensive training. The authors suggest future research should examine which musical features are most effective and whether using a child’s preferred melodies could further improve outcomes.

Limitations

The study was designed as a proof of concept, and the authors acknowledge several limitations. The sample size of three children prevents broad generalization. Session-to-session variability also meant that no stable improvement trend emerged during the intervention period. Ceiling effects in Child B’s social gesture scores made condition differences difficult to measure. In addition, the single-subject design cannot determine whether improvements would generalize beyond the clinical setting, which remains a major challenge in ASD intervention research.

Conclusion

Paul et al. (2015), led by Nandini Chatterjee Singh, provide an important preliminary demonstration that sung directives can improve socio-communicative responsiveness in young children with ASD. By connecting behavioral findings with neuroimaging evidence on preserved song processing, the study argues that song is not simply a motivational aid but a more accessible communicative pathway for some autistic children. These findings could help shape future communication-based interventions, especially in low-resource settings where scalable and accessible approaches are needed.

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