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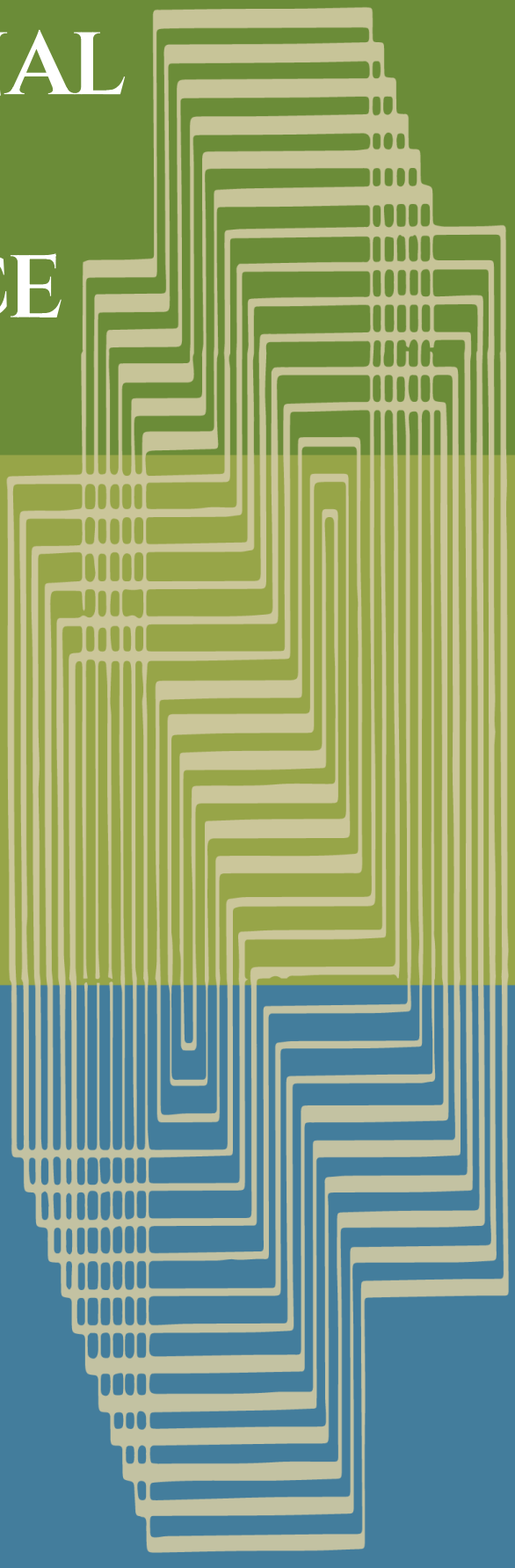

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Journey from Volunteering to Research: A Bilingual Classification Guide and Case-Based Pathways for Para Sport Participation

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Abstract

Background: Para sport can advance rehabilitation, health, confidence, and social participation, yet newcomers often face information gaps and difficulty navigating classification and first steps. This project developed Power in Motion, a bilingual (English/Korean) plain-language guide that explains classification, links to official rules, and organizes impairment-based entry pathways. We paired the guide with case-mapped recommendations to test practical use.

Methods: We used a practical qualitative workflow integrating (1) participant observation at classification events, training sites, and hospitals in Korea (2018–2025); (2) development of a bilingual guide featuring classification basics, an impairment–sport mapping table, concise sport pages with current rule links and minimum impairment criteria, and curated federation/hospital contacts; and (3) individualized pathway design for two adults. Field notes informed thematic analysis and guide structure. Case work was retrospective, de-identified, and exempt from full institutional review.

Results: Observations highlighted three barrier domains: information/language (uncertainty about eligibility and where to begin), structural/administrative (classifier shortages, event-only scheduling, centralization), and psychological (early discouragement and fear of a "wrong class"). The guide enabled rapid scanning of eligible sports and direct access to authoritative documents,

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while EN–KR terminology harmonization and version/date stamps improved clarity and trust. Case pathways aligned options with functional profiles and preferences: seated precision and upper-limb sports after thoracic spinal cord injury; unilateral-friendly options (boccia, throws, rowing) after hemiplegia. Each pathway was staged across short-, mid-, and long-term goals to support shared decision-making.

Conclusions: Combining a bilingual, beginner-ready guide with case-mapped pathways offers a practical bridge between complex rules and newcomer needs, and may lower entry barriers where classification infrastructure is uneven. Future work should formalize update cycles, expand the case series, and integrate hospital-to-federation referral pipelines.

Keywords: para sport; classification; eligible impairment; sport class; participation barriers; rehabilitation

Introduction

Background and Rationale

For people with disabilities, sport contributes to rehabilitation, health promotion, confidence, and social integration (Blauwet & Willick, 2012; Park et al., 2025) . However, participation remains low due to multiple barriers: lack of clear information, psychological burden, transportation and facility constraints, and the complexity of sport classification and insufficient accessible information (Ham et al., 2023; Jaarsma, 2014). In the Paralympic movement, athletes who meet a sport's eligible impairment criteria—covering physical, visual, or intellectual impairment—are grouped into sport classes based on their functional ability, with class rules defined by each sport(International Paralympic Committee, 2025). Classification is essential for fair competition because it minimizes the impact of impairment so that performance decides results(International Paralympic Committee, 2025; Tweedy& Vanlandewijck, 2011). However, classification rules vary across sports and are often difficult to understand(International Paralympic Committee, 2025; Tweedy& Vanlandewijck, 2011; Wileman et al., 2025) Newcomers struggle to identify sports that fit their impairment and to navigate participation requirements(Jaarsma et al., 2014).

Additionally, in Korea, stable classification is difficult to carry out in certain sports, creating gaps in standardized procedural guidance and in information gathering (Han et al., 2023). These gaps widen the divide over 'which sport, and how to begin,' causing potential participants to become discouraged at the earliest stage.

Since 2018, I have volunteered at para sport events, training sites, and hospitals, witnessing these challenges first-hand. Prospective athletes and families repeatedly asked where to get classified, which sports suit which impairments, and how to begin. To address this gap, I launched a bilingual blog Power in Motion in 2024 to introduce Paralympic sports, explain classification in plain language, and provide impairment-based guidance(Park & Park, 2024). The goal was to run Korean and English side by side to improve information accessibility—especially for readers less comfortable with English—and to close the distance between official classification rules and the practical information beginners actually need.

Aim of the Study

This study offers a student-led, practical response to barriers identified through volunteering. Specifically, (1) I used participant observation to describe classification-related bottlenecks; (2) I developed a bilingual online guide that organizes IPC and IF classification rules by sport; and (3) with a physiatrist mentor, I prepared two impairment-matched case pathways (retrospective case reports) illustrating tailored sport recommendations, which were submitted to a medical journal (Park et al., 2025). By linking service, a digital resource, and case mapping, this project proposes a model that helps athletes find sports aligned with their impairments and preferences and demonstrates how high school student-initiated project can scale into academic output and community impact.

Methods

Design Overview

This was a practical, qualitative study that integrated three linked activities—volunteering-based observation, development of a bilingual classification guide, and case-mapped participation pathways—into one workflow.

Stage 1: Volunteering and Participant Observation (2018–2025)

Context and sites: Activities took place in Korea across classification events and training settings between 2018 and 2025 (e.g., ParaVolley—Yongpyong Resort, PyeongChang; Sports Rehabilitation Center, Cheonan; Olympic Hall, Seoul; Korean Paralympic Committee National Training Center, Icheon).

Roles:

- **Classification events support:** assisted venue preparation; guided athletes/families; supported consent/insurance checks; observed medical/functional classification; organized documents and data flow.
- **Training/event support (non-classification):** facilitated hands-on parasport experiences; maintained equipment/ice; organized practice areas; supported matches and national-team training; provided basic athlete support during training blocks.

To minimize potential bias arising from the researcher's multiple roles as a volunteer, observer, and resource developer, clinical evaluations and impairment assessments were conducted independently by licensed rehabilitation physicians. The student researcher did not participate in medical decision-making or classification judgments. Interpretation of findings and case summaries were reviewed collaboratively by all authors to ensure clinical accuracy and objectivity.

Data capture: Structured field notes and brief post-event memos targeted three domains: (a) information gaps, (b) structural/administrative barriers, and (c) psychological barriers.

Analysis: Observations from field notes were compared with a national-level report on Korea's classification infrastructure and discussed with my research mentor to derive themes that informed subsequent stages (Han et al., 2023).

Stage 2: Development of a Bilingual Classification Guide (Power in Motion)

Aim: Reframe Paralympic classification rules into beginner-ready, plain-language, Korean–English materials that answer three starter questions: Which sports are open to my impairment? Where and how do I read the rule? Whom do I contact?

Sources and extraction: I reviewed official documents from the International Paralympic Committee (IPC) and International Federations (IFs), national reports, and relevant web resources (International Paralympic Committee, 2025). For 22 Summer and 6 Winter sports, I extracted (a) eligible impairment criteria, (b) minimum impairment criteria, and (c) sport-class structures, recording each rule's version/date and a persistent link to the primary PDF or landing page.

Core products:

- **Impairment–sport mapping table:** A cross-walk of ~10 umbrella impairment categories (e.g., impaired muscle power/spinal cord injury, brain injury/cerebral palsy, limb deficiency, visual or intellectual impairment, etc.) × Paralympic sports, so users can see "what is open to whom" at a glance (Table 1).
- **Plain-language sport pages (EN/KR):** Brief sport overviews that define key class concepts in simple terms, summarize the classification pathway, and provide IF rule links and contacts using standardized terminology.
- **Curated links & contacts:** Consistent, one-page pointers to IF/IPC rules and to national/international federation (NPC/NF) or hospital contacts for accessing classification. These components are summarized in a poster-style overview (Figure 1).

Content & access: The Power in Motion blog hosts (1) classification basics and sport overviews; (2) the impairment–sport table; (3) direct IF/IPC rule links; (4) federation/hospital contacts; and (5) Q&A posts. All content is bilingual and open access (Park & Park, 2024).

Compilation note: Links were verified at build time and scheduled for periodic checks. Early usage patterns and impact are reported in Results.

Stage 3: Case-Mapped Participation Pathways

Aim: To apply the bilingual guide (Stage 2) to two adult cases and convert impairment and personal preferences into individualized para sport participation pathways.

Participants & ethics: Two adult patients seeking sport guidance were included. The activity received IRB exemption from Soonchunhyang University Seoul Hospital (IRB No. 2025-05-004). All data were de-identified, and written consent was obtained.

Data collection: We performed a retrospective review of medical records (diagnosis, neurological/functional assessments, mobility, upper-limb function, activities of daily living) and

conducted brief interviews to capture prior sport experience, preferences, goals, and access to local facilities.

Pathway design: Using the Stage 2 impairment–sport mapping table (Table 1) and IF rules, we generated candidate sports for each case and filtered them by three weighted criteria: safety, accessibility, and preference. Recommendations were staged as short-term (start now), mid-term (after training/adaptation), and long-term (advanced/competitive or leadership goals). Final pathways were summarized in simple diagrams to support shared decision-making.

Results

Theme 1: Barriers Identified in Volunteering

Information/language barriers: Newcomers often did not know which sports accept which impairments, where to get classified, or how to begin; English-heavy, technical documents amplified confusion (Han et al., 2023; Jaarsma et al., 2014).

Structural/administrative barriers: Classification was concentrated in major cities or scheduled immediately before major events; shortages of classifiers/administrative staff led to last-minute changes and paperwork issues; event-only classification discouraged rural youth and first-timers (Han et al., 2023).

Psychological barriers: Negative first encounters, fear of failing to obtain the desired class, and guilt about "taking a spot" inhibited engagement, even when logistics were addressed; early positive experiences and peer mentoring appeared critical.

Bridge to next stages: These volunteer-derived themes directly motivated Stage 2 (development of the bilingual classification guide) and Stage 3 (case-mapped participation pathways), shaping both the content we produced and the decision rules used in pathway design.

Theme 2: Guide Output and Early Use

Guide features: By combining the impairment–sport table **(Table 1)** with short plain-language sport pages, users can quickly scan options and then click through to official IF/IPC PDFs for

details. Version/date stamps and EN–KR term harmonization improved clarity and trust for first-time readers(Park & Park , 2024).

Use cases:

- **Clinical counseling:** In rehab hospitals, the table was opened during visits to show "eligible sports" for a given impairment, followed by the blog link for self-study of rules/steps before a deeper counseling session.
- **Volunteer/peer training:** Educators used the guide's classification overview and sport posts to teach the purpose/core concepts of classification and sport-specific features in a structured way.
- **Families & beginners:** Readers reported that they could understand sports and rules independently, contact listed national federations, and secure concrete next steps for "where to ask / what to prepare."

Early feedback: Informal comments suggested that English-heavy technical documents no longer created the same level of uncertainty or hesitation at the start; many felt it was "worth trying."

Bridge to Stage 3: These outputs and early use patterns directly supported Stage 3 by operationalizing the table and rule links into individualized participation pathways for two adults, with safety, accessibility, and preference used as explicit weighting factors during design.

Theme 3: Case-Mapped Participation Pathways

Case 1. Male, 31; lower thoracic SCI (paraplegia) due to transverse myelitis with mild spasticity; former fitness trainer; prefers accuracy-based individual sports; low interest in team/ball sports(Park et al., 2025). Upper-limb and trunk function were near normal; impairments aligned with IPC categories for muscle power and coordination/control. **Core recommendations:** para archery, para shooting, wheelchair fencing. Archery/shooting leverage hand–eye precision and seated posture and are commonly used, beneficial pathways after SCI, while wheelchair fencing systematically engages upper-limb strength and trunk stability(ActiveSG Circle, 2024; Quantum Rehab, 2025).

Staging:

• **Short-term:** connect with a local para-archery team; begin basic training and initiate

classification.

• **Mid-term:** intensify training; target domestic events (e.g., national para games).

• **Long-term:** continue as an athlete toward elite goals or expand into coaching/classification roles for sustained involvement.

Case 2. Male, 45; right hemiplegia after left intracerebral hemorrhage; former high-school ice hockey player; recently tried para table tennis but struggled with agility demands; wants a sport change and potential career linkage; right-side limitation with relative preservation on the left (Park et al., 2025). Eligible impairments aligned with IPC categories for muscle power and coordination/control. We prioritized sports allowing unilateral emphasis: boccia, para-athletics throws (e.g., shot put), and para rowing. Boccia is precision/strategy-oriented, feasible even with severe mobility limits, and offers upper-limb benefits(Suarez-Iglesias et al., 2020) throwing events allow strong-side performance and are well documented for hemiplegia(Children's Hemiplegia and Stroke Association, 2025) rowing (including indoor ergometer) can improve endurance and lateral symmetry with adaptation(Camuncoli, 2023).

Staging:

• **Short-term:** join a boccia club and complete initial classification; trial left-arm throws; add adapted rowing (PR categories) for conditioning and bilateral coordination.

• **Mid-term:** based on short-term experience, select the best-fit sport and intensify training; aim for domestic competition and official athlete registration.

• **Long-term:** continue an athletic track or expand into coaching/administrative leadership while maintaining regular sport for health.

Commonalities and contrasts: Motivation rose in both cases when pathways started from "what I can do now." Tailoring diverged by impairment, function, preferences, and environment: Case 1 emphasized seated, precision individual sports; Case 2 emphasized unilateral throwing, target sports, and conditioning through rowing.

Role Shift: "Volunteer" → "Blog Developer" → "Student Researcher"

The project charted a student's growth from event volunteer to bilingual information translator to co-researcher creating case pathways. Mentorship ensured ethical and clinical rigor. The sequence shows how youth-led, service-rooted inquiry can produce practical tools and academic writing.

Discussion

Theme 1: Barriers — Practice and policy implications

Through direct experience and a national report review, this study identified key issues in Korea's para sport classification system. The most notable challenges included a shortage of trained classifiers, large infrastructure gaps across sports, centralization in Seoul, and a lack of accessible information(Han et al., 2023). Many sports lacked access to qualified physician classifiers, making classification functionally unavailable(Han et al., 2023). Others held classification at short notice or far from competition dates, mostly in the capital region, which discouraged participation by athletes living outside major cities. Additionally, many federations did not offer updated classification materials in Korean. These findings matched what families and prospective athletes frequently asked on-site: "Which sports are open to me?" and "How can I get classified?"

Theme 2: Utility and limitations of the bilingual guide

To address these gaps, I created the Power in Motion blog—an open-access, bilingual resource that uses plain language to explain classification and maps impairments to eligible sports (Figure 1). It provides structured access to sport-specific summaries, links to official rules, and federation contacts. However, the guide is not an official publication by the Korean Paralympic Committee (KPC), and it was not reviewed by certified classifiers for every sport. Therefore, while useful, it should not be treated as a final authority. It must also be updated regularly as IF and IPC rules evolve. I promoted the resource to relevant hospitals and organizations, and while usage remains modest, it has already been used in clinical settings and peer trainings, and received positive early feedback for helping reduce entry-level confusion. In the future, if a formal government or federation-backed platform (like those in the U.S. or Australia) is launched(International

Paralympic Committee, 2025), this student-led tool could serve as an interim support model during the transition.

Theme 3: Case-based pathways and clinical integration

Applying the guide to two real-life adult cases showed how individualized sport pathways can be created based on impairment type, function, and personal preference(Park et al., 2025). Both cases received short-, mid-, and long-term recommendations, presented in a format that supported goal-setting and decision-making. Of course, with only two cases, generalizability is limited. The student author also could not conduct impairment evaluations directly, which required clinician involvement. Still, the process demonstrated how student observations can grow into actionable tools and scholarly work with mentorship.

Limitations: Given the small number of cases and the study's grounding in the South Korean para sport system, the findings should be interpreted with caution. In addition, the Power in Motion guide is a student-led, non-official resource that requires ongoing updates as IPC/IF rules evolve and has not undergone comprehensive, sport-by-sport review by certified international classifiers. While the pathways illustrate a feasible model for impairment-based sport guidance, broader applicability across different healthcare systems and national contexts requires further investigation.

In conclusion, this study began with volunteer service, developed a digital guide, and applied it to two clinical cases, illustrating how youth-led initiatives can connect practical insight with academic and community contributions. With further policy or institutional support, such efforts may reduce confusion for newcomers and encourage wider participation.

References

Park, J. W., Park, S., Park, S., & Han, S. H. (2025). Impairment-based guidance for para-sports selection: Insights from two case studies. *Soonchunhyang Medical Science, 31*(1), 14–18.

Blauwet, C., & Willick, S. E. (2012). The Paralympic Movement: Using sports to promote health, disability rights, and social integration for athletes with disabilities. *PM&R, 4*(11), 851–856.

Han, S. H., Lee, W. J., Park, J. W., et al. (2023). *Basic research for the standardization of the sports classification system for athletes with disabilities (Final research report).* Seoul: Korean Paralympic Committee. (In Korean)

Jaarsma, E. A., Dijkstra, P. U., Geertzen, J. H. B., & Dekker, R. (2014). Barriers to and facilitators of sports participation for people with physical disabilities: A systematic review. *Scandinavian Journal of Medicine & Science in Sports, 24*(6), 871–881. https://doi.org/10.1111/sms.12218

International Paralympic Committee. (2025). *Paralympic classification.* https://www.paralympic.org/classification

Tweedy, S. M., & Vanlandewijck, Y. C. (2011). International Paralympic Committee position stand: Background and scientific principles of classification in Paralympic sport. *British Journal of Sports Medicine, 45*(4), 259–269. https://doi.org/10.1136/bjsm.2009.065060

Wileman, T. M., McKay, M. J., Hackett, D. A., et al. (2025). Guiding evidence-based classification in para sporting populations: A systematic review of impairment measures and activity limitations. *Sports Medicine, 55*, 341–391. https://doi.org/10.1007/s40279-024-02132-y

Park, S., & Park, S. (2024). *Power in Motion: Classification* [Blog]. Naver Blog. Retrieved May 14, 2025, from https://blog.naver.com/qkrtndks8_

ActiveSG Circle. (2024). *Para archery and rehabilitation.* https://www.activesgcircle.gov.sg/learn/archery/para-archery-and-rehabilitation

Quantum Rehab. (2025). *A beginner's guide to wheelchair fencing.* https://www.quantumrehab.com/resources/consumer-article-a-beginners-guide-to-wheelchair-fencing.asp

Suarez-Iglesias, D., Ayan Perez, C., Mendoza-Laiz, N., Villa-Vicente, J. G., & others. (2020). Boccia as a rehabilitation intervention for adults with severe mobility limitations due to neuromuscular and other neurological disorders: Feasibility and effects on upper limb impairments. *Frontiers in Psychology, 11*, 581.

Children's Hemiplegia and Stroke Association. (2025). *Sports.* https://chasa.org/disability-sports/

Camuncoli, F., Polisciano, R., Este, A., Cernivani, G., Simoni, G., Piccinini, L., et al. (2023). Feasibility of a kinematics-based protocol for monitoring a patient with hemiplegia while performing indoor rowing. *Gait & Posture, 106*(Suppl 1), S34–S35.

Appendix A Table 1. Eligible Impairments by Paralympic Sport. Legend: Adapted from Park JW, Park S. et al. Impairment-Based Para Sports Guidance, Soonchunhyang Medical Science

Paralympic Even	Impaired muscle power	Impaired passive ROM[a]	Limb deficiency	Leg length difference	Short stature	Hypertonia	Ataxia	Athetosis	Vision Impairment	Intellectual Impairment
Summer Games										
Para archery	√	√	√			√	√		√*	
para athletics	√	√	√	√	√	√	√	√	√	√
Para badminton	√	√	√	√	√	√	√	√		
Boccia	√	√	√			√	√	√		
Para Canoe	√	√	√							
Para Cycling	√	√	√	√		√	√	√	√	
Para Equestrian	√	√	√	√	√	√	√	√	√	
Blind football									√	
Goalball									√	
Para Judo									√	
Para Powerlifting	√	√	√	√	√	√	√	√		
Para Rowing	√	√	√			√	√	√	√	
Shooting Para Sport	√	√	√			√	√	√	√*	
Sitting Volleyball	√	√	√	√		√	√	√		
Para Swimming	√	√	√	√	√	√	√	√	√	√
Para Table Tennis	√	√	√	√	√	√	√	√		√
Para Taekwondo	√	√	√	√*	√*	√*	√*	√*	√*	√*
Para Triathlon	√	√	√			√	√	√	√	
Wheelchair Basketball	√	√	√	√		√	√	√		
Wheelchair Fencing	√	√	√			√	√	√		
Wheelchair Rugby	√	√	√			√	√	√		
Wheelchair Tennis	√	√	√	√		√	√	√		
Winter Games										
Para alpine skiing	√	√	√	√		√	√	√	√	
Para biathlon	√	√	√	√		√	√	√	√	
Para cross-country skiing	√	√	√	√		√	√	√	√	
Para ice hockey	√	√	√	√		√	√	√		
Para snowboard	√	√	√	√		√	√	√		
Wheelchair curling	√	√	√			√	√	√		

(√): checkmark indicates eligibility; (*): not at the Paralympic Games; (a) ROM: range of motion

Appendix B Figure 1. Poster overview of Power in Motion, a bilingual (EN/KR) guide to Paralympic classification, showing site structure and key resources. Source: Power in Motion blog, Park Suo & Park Suan

Music-Evoked Emotion and Intention to Share Emotional Data: The Role of Positive and Negative Affect and Mental Privacy Awareness

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Abstract

As emotional artificial intelligence (AI) and mood-sensing technologies become increasingly integrated into everyday digital services, individuals are more frequently asked to share emotion-related or biometric data. Music is known to evoke strong emotional responses, yet little is known about how such emotional experiences influence willingness to share emotional data. This study examined whether positive and negative affect elicited by music predict emotional data-sharing intention and whether mental privacy awareness reduces such willingness. A total of 170 participants listened to a short music clip of their preferred genre and completed an online survey. Emotional responses were measured using the Positive and Negative Affect Schedule (PANAS), mental privacy awareness was assessed using the IPSA scale (Sim et al., 2012), and data-sharing intention was measured using a scale adapted from Kim et al. (2023). Regression analyses showed that positive affect significantly increased willingness to share emotional data, while negative affect was not a significant predictor. Mental privacy awareness significantly reduced emotional data-sharing intention. These findings suggest that positive emotional experiences may lower resistance to emotional data sharing, whereas mental privacy awareness functions as an important protective factor. The study highlights the importance of ethical transparency and informed consent in emotional AI and music-based digital platforms.

Keywords: music emotion, PANAS, emotional data sharing, mental privacy, emotional AI

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Introduction

Music plays an important role in everyday emotional experiences (Kim et al., 2010). People listen to music in a wide range of daily situations, such as while studying, relaxing, exercising, commuting, or using digital platforms including music streaming services and social media. Because music is closely connected to emotions, it is often used intentionally to regulate mood, reduce stress, or enhance concentration. Previous research (Sloboda & O'neill, 2001) has consistently shown that music can evoke strong emotional responses, including happiness, calmness, sadness, excitement, and tension. These emotional reactions are not only temporary feelings but can also influence individuals' attitudes, judgments, and behaviors in various contexts.

Importantly, emotional responses to music have been shown to affect decision-making processes (Lerner et al., 2015) and trust toward technology and digital services (Ajenaghughrure et al., 2018). For example, positive emotional experiences may increase openness, engagement, and favorable attitudes toward a platform, while negative emotions may lead to caution, avoidance, or skepticism. As music consumption increasingly occurs through digital systems, emotional experiences are becoming closely intertwined with technology use (Lustgarten et al., 2020). This connection highlights the importance of understanding how emotions elicited by music may influence users' behavioral intentions beyond simple enjoyment.

At the same time, rapid technological developments have enabled digital platforms to collect and analyze users' emotional states (Sang et al., 2024). Advances in emotional artificial intelligence (AI) now allow systems to infer emotions through facial expressions, voice patterns, physiological signals, and behavioral data. Wearable devices, smart applications, and online platforms are increasingly capable of detecting users' moods and emotional reactions in real time. While these technologies offer potential benefits, such as personalized services and improved user experiences, they also raise important ethical and psychological concerns.

With the integration of emotional artificial intelligence (AI) and mood-sensing technologies into digital platforms, concerns about mental privacy have been brought to the forefront. Unlike other types of personal data, mental data involve individuals' internal experiences, including emotions, motivations, and psychological vulnerabilities. Recent advances in affective computing have made it possible to infer mental states using behavioral and physiological cues, as well as emotional responses triggered by listening to music. Importantly, positive emotional states may decrease users' alertness to privacy risks and increase susceptibility to emotional data sharing, thereby weakening resistance to potential mental data privacy threats. Consequently, mental privacy needs to be understood not only in terms of data protection but also as a matter of

cognitive liberty, particularly in emotionally engaging digital environments where emotional experiences can shape data-sharing decisions.

One of the most significant concerns is mental privacy, which refers to the right to keep one's emotional and mental states private. Emotional data are highly sensitive because they can reveal intimate information about an individual's psychological well-being, vulnerabilities, and inner experiences (Wajnerman, 2021). Unlike basic demographic data, emotional data reflect how a person feels and reacts, making them especially personal. As a result, individuals may feel uneasy or threatened when asked to share emotional information, particularly if they are aware of how such data could be stored, analyzed, or misused.

Despite growing academic and public attention to emotional AI and data privacy, relatively little research has focused on the role of emotional experiences themselves in shaping emotional data-sharing behavior. Most existing studies (Schomakers et al., 2022; Yin & Hsu, 2023) have examined technological factors, perceived usefulness, or general privacy concerns, rather than the emotional states that precede data-sharing decisions. In particular, it remains unclear whether positive emotional experiences make individuals more willing to share emotional data, or whether negative emotions reduce such willingness. Furthermore, the extent to which mental privacy awareness acts as a psychological barrier to emotional data sharing has not been sufficiently explored.

To address this research gap, the present study examines how music-evoked emotional responses relate to emotional data-sharing intention. Specifically, positive and negative affect elicited by music are measured using a validated emotional scale, the Positive and Negative Affect Schedule (PANAS). In addition, the study investigates mental privacy awareness as a key factor that may limit individuals' willingness to share emotional information. By focusing on the interaction between emotional experiences and privacy awareness, this study aims to contribute to a better understanding of emotional data sharing in the context of music and emotional AI technologies.

Literature Review

Music-Evoked Emotion

Music has a unique ability to evoke emotions without direct verbal communication. Emotional responses to music depend on individual preferences, musical structure, and listening context (Juslin & Västfjäll, 2008). To measure emotional responses reliably, researchers often use

standardized scales rather than self-created items. The Positive and Negative Affect Schedule (PANAS) is one of the most widely used tools for measuring emotional states. It distinguishes between positive affect (e.g., enthusiasm, excitement, interest) and negative affect (e.g., distress, nervousness, fear). This distinction allows researchers to examine how different emotional qualities influence attitudes and behaviors (Watson, Clark, & Tellegen, 1988; Crawford & Henry, 2004).

Emotional Data-Sharing Intention

Emotional data-sharing intention refers to an individual's willingness to allow digital platforms or devices to collect, analyze, or store emotion-related or biometric information. Prior studies suggest that positive emotional engagement can increase trust and openness toward digital systems, thereby increasing willingness to share personal data (Pelau et al., 2024). However, emotional data are more sensitive than typical usage data, and individuals may hesitate to share such information due to heightened privacy concerns and perceived risks (Lustgarten et al., 2020).

Mental Privacy Awareness

Mental privacy awareness reflects the extent to which individuals recognize emotional and mental-state data as private and deserving of protection. Individuals with higher mental privacy awareness tend to be more cautious about emotional data sharing and more sensitive to ethical issues related to emotional AI and affective computing technologies (Ienca & Andorno, 2017; Lustgarten et al., 2020).

Research Questions

Based on the literature, the following research questions were examined:

Research Question 1: Does a more positive emotional response to music increase intention to share emotion-related data?

Research Question 2: Does higher mental privacy awareness reduce intention to share emotional or biometric data?

Methods

Participants

A total of 175 participants took part in the study (approximately balanced by gender; mean age in the early 20s). Participants were recruited online and voluntarily completed the survey. Participants were primarily university students and young adults residing in South Korea, reflecting a population that frequently uses music streaming services and digital platforms.

Power Analysis

An a priori power analysis was conducted to determine the minimum required sample size for multiple regression analysis with two predictors. Assuming a small-to-medium effect size, a significance level of .05, and statistical power of .80, the analysis indicated that a minimum sample size of approximately 155 participants was required. To account for incomplete or inattentive responses, the target sample size was increased, resulting in 170 valid responses.

Procedure

Participants selected one preferred music genre (pop, classical, or ballad) and listened to a two-minute music clip using earphones or headphones. Immediately after listening, participants completed an online questionnaire measuring emotional responses, mental privacy awareness, and emotional data-sharing intention.

Measures

Emotional responses were measured using the Positive and Negative Affect Schedule (PANAS) developed by Watson, Clark, and Tellegen (1988). The scale consists of 20 items, including 10 items measuring positive affect and 10 items measuring negative affect. Participants rated their emotional responses on a five-point Likert scale (1 = not at all, 5 = extremely). Mental privacy awareness was measured using four adapted items from the Information Privacy Scale for Affective Data (IPSA; Sim et al., 2012), assessing concerns about emotional data collection, storage, and protection. The items assessed participants' concern about emotional data collection, storage, and the protection of emotional and mental-state information. Emotional data-sharing intention was measured using four items adapted from Kim et al. (2023), assessing willingness to share emotional or biometric data with digital platforms.

Results

Validity and Reliability

Exploratory factor analysis (EFA) was conducted to examine the construct validity of all measurement scales. Descriptive statistics and reliability coefficients presented in Table 1 indicate that all scales demonstrated acceptable internal consistency, with Cronbach's α values ranging from .83 to .91. As shown in Table 2, the PANAS exhibited a clear two-factor structure consisting of positive affect and negative affect, while mental privacy awareness and data-sharing intention each loaded onto a single factor. All factor loadings exceeded the acceptable threshold, and the explained variance for each construct was satisfactory.

Table 1. Descriptive Statistics and Reliability

Variable	Mean	SD	Cronbach's α
Positive Affect	4.10	0.62	.91
Negative Affect	2.21	0.71	.88
Mental Privacy Awareness	3.76	0.69	.86
Data-Sharing Intention	2.64	0.83	.83

Table 2. Exploratory Factor Analysis Results

Scale	KMO	Variance Explained	Factor Loadings
Positive Affect (PANAS)	.90	52.4%	.56 – .84
Negative Affect (PANAS)	.90	50.1%	.53 – .81
Mental Privacy Awareness	.84	58.1%	.67 – .82
Data-Sharing Intention	.81	55.6%	.62 – .80

Main Findings

To examine the predictors of emotional data-sharing intention, a multiple regression analysis was conducted. The results are presented in Table 3. The overall regression model was statistically significant and explained 31% of the variance in emotional data-sharing intention ($R^2 = .31$).

As shown in Table 3, positive affect emerged as a significant positive predictor of emotional data-sharing intention ($\beta = .29$, $p < .001$), indicating that participants who experienced higher levels of positive affect were more willing to share emotional data. In contrast, negative affect did not significantly predict data-sharing intention ($\beta = -.08$, $p = .23$). Mental privacy awareness showed

a significant negative relationship with emotional data-sharing intention ($\beta = -.36$, $p < .001$), suggesting that individuals with higher awareness of mental privacy concerns were less willing to share emotional data.

Table 3. Regression Analysis Predicting Data-Sharing Intention

Predictor	β	t	p
Positive Affect	.29	3.84	< .001
Negative Affect	−.08	−1.21	.23
Mental Privacy Awareness	−.36	−4.91	< .001
$R^2 = .31$			

Discussion

This study examined how music-evoked emotions and mental privacy awareness influence emotional data-sharing intention. Overall, the findings suggest that emotional experiences and privacy awareness play distinct but complementary roles in shaping individuals' willingness to share emotional data. Specifically, positive emotional experiences increased openness to emotional data sharing, whereas mental privacy awareness functioned as a strong and consistent protective factor. However, this study has several limitations that should be considered, including the reliance on self-report surveys and the use of selected music genres and an online sampling method, which may limit the generalizability of the findings.

Positive affect emerged as a significant predictor of emotional data-sharing intention. When individuals felt emotionally uplifted, relaxed, or comfortable while listening to music, they were more willing to share emotional or biometric information. This supports the idea that positive emotional states can increase openness toward digital systems and temporarily lower resistance to emotional data sharing in emotionally engaging environments.

In contrast, negative affect did not significantly predict emotional data-sharing intention. This suggests that negative emotional experiences may not directly influence data-sharing decisions, but may instead lead users to disengage from the system. Taken together, these results indicate that positive emotional experiences may play a more influential role than negative emotions in shaping openness to emotional data sharing in music-related contexts.

Mental privacy awareness showed a strong negative relationship with emotional data-

sharing intention. Individuals who perceived emotional and mental-state data as highly private were consistently less willing to share such information, even when experiencing positive emotions. This finding underscores mental privacy awareness as a key psychological barrier that can override the influence of emotional states.

These findings have important implications for the design and use of emotional AI and music-based digital platforms. When users are emotionally engaged, they may be more likely to consent to data collection without fully considering long-term privacy risks. Therefore, platforms should avoid relying solely on emotional engagement to encourage data sharing. Instead, they should provide transparent explanations, clear consent options, and ethical design choices that respect users' mental privacy. Such efforts may help balance technological innovation with the protection of individual rights.

Conclusion

This study demonstrates that music-evoked positive affect increases emotional data-sharing intention, while mental privacy awareness reduces such willingness. By distinguishing between positive and negative affect, the findings highlight the unique role of positive emotional experiences in shaping openness to emotional data sharing. The use of a validated emotional scale strengthens the reliability of the results and supports the importance of accurately measuring emotional responses in research on emotional AI.

At the same time, the strong effect of mental privacy awareness underscores the need to consider psychological and ethical factors when examining emotional data sharing. As emotional AI technologies and music-based digital services continue to expand, protecting emotional and mental-state data will become increasingly important. Transparent data practices, informed consent, and user-centered ethical design should be prioritized to ensure responsible and trustworthy use of emotional data.

Future research may further explore how different types of music, platform contexts, or user characteristics influence emotional data-sharing behavior. Understanding these factors will be essential for developing emotional AI systems that enhance user experience while respecting mental privacy.

References

Ajenaghughrure, I. B., Sousa, S. C. D., & Lamas, D. R. (2018). The interplay between emotion and trust in technology. In *Proceedings of the Second African Conference for Human Computer Interaction: Thriving Communities* (pp. 1–4). ACM. https://doi.org/10.1145/3283458.3283480

Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 43*(3), 245–265. https://doi.org/10.1348/0144665031752934

Ienca, M., & Andorno, R. (2017). Towards new human rights in the age of neuroscience and neurotechnology. *Life Sciences, Society and Policy, 13*(1), 1–27. https://doi.org/10.1186/s40504-017-0050-1

Juslin, P. N., & Västfjäll, D. (2008). Emotional responses to music: The need to consider underlying mechanisms. *Behavioral and Brain Sciences, 31*(5), 559–575. https://doi.org/10.1017/S0140525X08005293

Kim, J., Im, E., & Kim, H. (2023). From intention to action: the factors affecting health data sharing intention and action. *International Journal of Medical Informatics*, *175*, 105071. https://doi.org/10.1016/j.ijmedinf.2023.105071

Kim, Y. E., Schmidt, E. M., Migneco, R., Morton, B. G., Richardson, P., Scott, J., & Turnbull, D. (2010). Music emotion recognition: A state of the art review. In *Proceedings of the 11th International Society for Music Information Retrieval Conference (ISMIR 2010)* (pp. 255–266).

Lerner, J. S., Li, Y., Valdesolo, P., & Kassam, K. S. (2015). Emotion and decision making. *Annual Review of Psychology, 66*(1), 799–823. https://doi.org/10.1146/annurev-psych-010213-115043

Lustgarten, S. D., Garrison, Y. L., Sinnard, M. T., & Flynn, A. W. (2020). Digital privacy in mental healthcare: Current issues and recommendations for technology use. *Current Opinion in Psychology, 36*, 25–31. https://doi.org/10.1016/j.copsyc.2020.03.012

Pelau, C., Dabija, D. C., & Stanescu, M. (2024). Can I trust my AI friend? The role of emotions, feelings of friendship and trust for consumers' information-sharing behavior toward AI. *Oeconomia Copernicana*, *15*(2), 407-433. https://doi.org/10.24136/oc.2916

Sang, V. M., Thanh, T. N. P., Gia, H. N., Nguyen Quoc, D., Long, K. L., & Yen, V. P. T. (2024). Impact of user-generated content in digital platforms on purchase intention: The mediating role of user emotion in the electronic product industry. *Cogent Business & Management, 11*(1), Article 2414860. https://doi.org/10.1080/23311975.2024.2414860

Schomakers, E. M., Lidynia, C., & Ziefle, M. (2022). The role of privacy in the acceptance of smart technologies: Applying the privacy calculus to technology acceptance. *International Journal of Human–Computer Interaction, 38*(13), 1276–1289. https://doi.org/10.1080/10447318.2021.1998357

Sim, I., Liginlal, D., & Khansa, L. (2012). Information privacy situation awareness: Construct and validation. *Journal of Computer Information Systems, 53*(1), 57–64. https://doi.org/10.1080/08874417.2012.11645529

Sloboda, J. A., & O'Neill, S. A. (2001). Emotions in everyday listening to music. In P. N. Juslin & J. A. Sloboda (Eds.), *Music and emotion: Theory and research* (pp. 415–429). Oxford University Press.

Wajnerman Paz, A. (2021). Is mental privacy a component of personal identity? *Frontiers in Human Neuroscience, 15*, Article 773441. https://doi.org/10.3389/fnhum.2021.773441

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063

Yin, Y., & Hsu, C. (2023). The role of privacy and emotion in ARBS continuing use intention. *Internet Research, 33*(1), 219–241. https://doi.org/10.1108/INTR-09-2021-0692

The Effects of Lavender Aromatherapy on Stress, Concentration, and Academic Performance in Adolescents

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Introduction

Academic stress has become a notable issue among adolescents in all parts of the world. Students in secondary school undergo several academic pressures in the form of exams, hefty assignments, time limits, and competitive performance pressure on a routine basis. All these pressures are linked to increased psychological distress, reduced concentration, and poor academic performance. Current literature shows that teenage children are more likely to experience stress and lower levels of satisfaction with school life than younger children, with academic pressure being one of the key factors (Seo, 2009).

Adolescence is a critical stage of development that is marked by ongoing neurological, emotional, and mental development. At this phase, brain structures involved in executive functions, emotional evidence, and attention control are underdeveloped. Chronic stress or inadequately dealt with stressors in adolescence can disrupt these developmental processes and negatively impact the results of learning. Higher stress levels have been associated with concentration difficulties, memory lapses, emotional dysregulation, and declining academic interest.

Due to the rising rates of academic stress in adolescents, educators and researchers have been turning to effective, accessible, and low-cost strategies to promote student well-being. Despite the demonstrated efficacy of psychological counselling and structured stress-management programs, their application can be costly in terms of resources and trained staff on the one hand, and access in most educational settings is restricted. This has led to a move towards divergent interventions that can be incorporated into the classroom environments with minimal interference to teaching operations.

Scent stimulation, through aromatherapy, is one of those interventions. Aromatherapy is the practice of using essential oils derived from plants to affect psychological or physiological conditions with inhalation. The limbic system, the center of emotion, memory, and attention, is directly neurally related to the olfactory system. This specific neurological pathway allows scents

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to cause the quick changes in mood and cognitive performance without undergoing any conscious kind of processing.

One of the essential oils that is most widely studied in the field of aromatherapy is lavender (Lavandula angustifolia). It has been proven to have calming, anxiolytic, and cognitive-enhancing effects on a variety of populations based on empirical evidence. Inhalation of lavender was positively linked to decreased academic stress and anxiety (Ahmad et al., 2019; Enwright et al., 2022), better attentional control and cognitive flexibility (Afghan et al., 2024), and greater control over emotions (Malloggi et al., 2021). There is also meta-analytic evidence indicating that aromatherapy measures have the potential to diminish test anxiety and enhance academic-related changes, especially when used in student groups (Luan et al., 2023).

Although the amount of evidence in support of aromatherapy is growing, cutting-edge studies focusing on the adolescent demographic in the context of academic tasks are scarce. A significant part of the current literature has been based on university students or clinical samples, which resulted in a gap that necessitates the need to understand the impact of scent stimulation on younger learners during normal scholarly practices. In addition, the results regarding the stress-reducing effect have been discrepant, with certain studies showing substantial improvements and others suggesting small short-term impacts (Ahmad et al., 2019).

The current pilot study accordingly investigated the effects of the lavender scent stimulation on perceived stress, concentration, and academic performance among adolescents during academic tasks. By bridging this gap, the study will be able to develop some initial evidence on the plausibility and possible worth of scent-based interventions in educational settings.

Methods

2.1 Participants

In this pilot study, ten adolescent subjects were identified in a secondary school setting. Each of the participants was within the adolescent age range and was actively pursuing formal academic programs. The participants prepared themselves to complete academic tasks in both experimental conditions: the exposure to the scent of lavender and the no-scent control condition. A within-subject design was used to downplay the effects of individual differences in cognitive ability, baseline stress levels, and scent sensitivity.

The small sample size represents the preliminary nature of the research. Aromatherapy studies often use pilot studies to determine the viability of the research and to approximate the size of effect before subsequent large-scale research (Rahmawati et al., 2022).

2.2 Scent Selection

The choice of lavender essential oil was based on its properly established calmative and cognitive-stimulating effects. Past studies have also indicated that lavender inhalation is linked to anxiety reduction, enhanced emotional regulation, and attentional performance in diverse groups (Ahmad et al., 2019; Malloggi et al., 2021). Beyond this, neurophysiological evidence of EEG research indicates that lavender also affects neural changes in reaction accuracy and attention to diverse relocation (Afghan et al., 2024).

Moreover, both systematic reviews indicate the significance of the quality of essential oils and inhalation techniques in assessing the effectiveness of aromatherapy (Malloggi et al., 2021). It is on this basis that the use of lavender was deemed fitting and theoretically sound as a scent in the study of academic task performance.

2.3 Experimental Design

Within-subject experimental design was chosen. Participants were also told to compete on the same problem-solving challenges in two conditions: the presence of the lavender scent and the no-scent condition. The sequence of conditions was counterbalanced in order to minimize the possible order and fatigue effects. The application of lavender aroma was performed by passive sniffing in the testing space, where similar exposure was maintained among participants.

Both conditions underwent standardization with regard to the difficulty of the task, time taken, as well as the instruction method in order to facilitate internal validity. The methodological strategy is congruent with recent research on the impact of ambient aromas on cognitive functioning and stress recovery (Zhang et al., 2025).

2.4 Measurement Instruments

The use of brief self-reporting questionnaires was applied to measure perceived stress and concentration, and these were administered at the end of every task session. The participants assessed their levels of stress and concentration on three-point ordinal scales (low, moderate, high). Aromatherapy studies use subjective measures extensively because they are sensitive to short-term psychological shifts (Rahmawati et al., 2022).

Task scores were used to assess academic performance, which was calculated as the total number of correct responses to the problem-solving tasks.

2.5 Data Analysis

Non-parametric statistical tests were used due to the small sample size and ordinal data type. The results of the scent and no-scent conditions were compared and analyzed using Wilcoxon signed-rank tests. Control of multiple comparisons was effected by the Holm correction. Rank-biserial correlation was used to determine the extent of observed effects (Luan et al., 2023).

Results

This pilot study established a number of interesting patterns regarding the impacts of lavender scent stimulation on perceived stress, concentration, and academic performance among adolescent study participants. Although statistical significance was not achieved, most preponderantly due to the small sample size, both descriptive statistics and effect size estimates indicated patterns worth additional investigation.

3.1 Effects of Lavender Scent on Concentration

When it comes to concentration, subjects indicated higher levels of concentration in the lavender scent condition compared to the no-scent condition. As was demonstrated in Table 1, the mean concentration scores moved up to 2.30 in the lavender software, as compared to 1.90 in the no-scent condition. The perceived disparity is associated with a medium-to-large effect size, which suggests that the influence of the scent of lavender on the attentional focus during academic activities may have a meaningful impact. The results support previous studies that suggest that lavender inhalation can have beneficial effects on cognitive processes in terms of attention, accuracy, and cognitive flexibility (Afghan et al., 2024). The improvement in concentration observed could be due to the existence of direct neural pathways between the olfactory system and brain activity regions that are related to attention and executive functioning.

3.2 Effects of Lavender Scent on Academic Performance

A similar promising trend was noted in academic performance. The average task scores increased from 7.50 out of 10 correct during the no-scent condition to 8.50 out of 10 correct during lavender. This effect is a medium effect size, which suggests that there may be a significant enhancement in task performance. Correspondent literature has consistently reported parallel improvements in aromatherapy studies relating to academic performance and stress examinations of students. As an example, it was found in study findings by Enwright et al. (2022) that chiropractic students tended to show less test anxiety and better perceived academic readiness when exposed to lavender and rosemary scents. Also, a meta-analysis by Luan et al. (2023) showed that inhalation-based aromatherapy was effective in reducing test anxiety and indirectly enhancing academic performance in college students. Though the current study used adolescents instead of university students, the recorded performance improvement indicates that the cognitive advantages of lavender have the potential to be extended to levels of education.

3.3 Effects of Lavender Scent on Perceived Stress

Conversely, perceived stress levels also exhibited very little difference between the two experimental conditions. The results indicated that the mean stress scores were slightly lower in

the no-scent condition than those found in the lavender exposure, as shown in Table 1, 2.10 as compared to 2.00. This small effect indicates that a short period of smelling lavender could be inadequate to produce detectable or immediate decreases in subjective stress between adolescents. This finding is consistent with previous studies showing that aromatherapy's effect against stress could require increased exposure duration, repetitive sessions, or a higher baseline of stress (Ahmad et al., 2019). Though Ahmad et al. (2019) found that academic stress was significantly lowered after lavender aromatherapy, in their research, participants were repeatedly exposed in a long-term intervention, which could explain the results.

3.4 Summary of Results

Figure 1 shows the variation in mean concentration scores between the two experimental conditions. According to the bar chart, it is evident that the concentration was higher in the lavender scent condition when compared to the no-scent condition, which affirms the descriptive trends in Table 1. Its agreement with tabular and graphical data indicates that one can have.

confidence in the observed pattern, despite the small sample size.

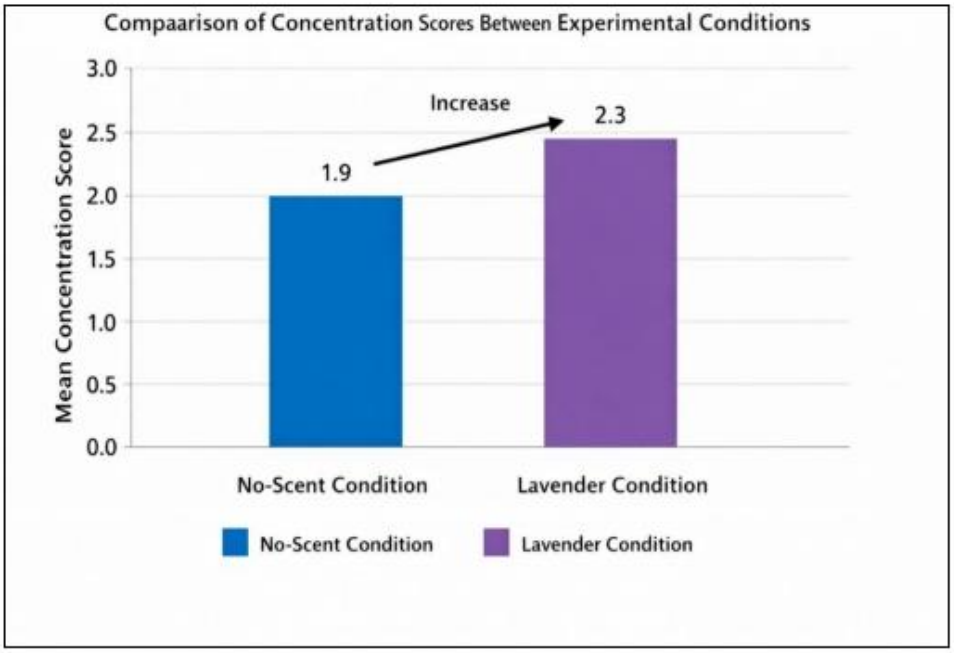

Figure 1: Comparison of Concentration Scores Between Experimental Conditions

Table 1: Mean Scores for Stress, Concentration, and Academic Performance (N = 10)

Variable	No-Scent Condition	Lavender Condition
Perceived Stress	2.10	2.00
Concentration	1.90	2.30
Academic Performance	7.50	8.50

In general, the results indicate that stimulating lavender scent could have stronger short-term implications on cognitive (i.e., concentration and task performance) and affective (i.e., perceived stress) outcomes. These outcomes indicate the significance of identifying the body of cognitive and emotional variables in assessing scent-based amenities in learning environments. Even though cocaine-induced stress reduction might need longer or repeated exposure to the scent, concentration and academic performance may already show signs of improvement after short exposure to the scent during academic activities.

Discussion

This pilot study measured the effect of lavender scent stimulation on reportedly perceived stress, concentration, and academic performance in adolescents. The findings show that exposure to lavender could improve concentration and academic performance in the course of scholastic activities, even when they are not accompanied by immediate decreases in perceived stress. Concentration scores increased between 1.90 in the no-scent condition and 2.30 with exposure to lavender, and the academic performance increased between 7.50 and 8.50 correct responses, showing that olfactory stimulation can be associated with some actionable effects on cognitive functioning. These results are harmonious with the literature available that highlights the cognitive-boosting properties of aromatherapy (Afghan et al., 2024; Luan et al., 2023).

The recorded enhancement of concentration coincides with neuroscientific data that lavender can have a certain impact on the activity of the brain linked to attentional processes and cognitive adaptation. EEG research additionally proved a strong impact of lavender inhalation on shifting between attentional capacities and response accuracy in the brain (Afghan et al., 2024). Such effects are especially relevant in adolescence, a period of development when the prefrontal cortex and executive functioning systems have not yet reached maturity, and thus they are susceptible to environmental and sensory stimuli. In addition, the study of environmental perfumes shows that environmental exposure to vegetable-compounded scents, e.g., lavender and

gardenia, can boost brain functionality and aid stress relief, which supports the extended generally nationwide generalizability of smell-based interventions (Zhang et al., 2025; Cai et al., 2025). All of these findings support the practicality of straightforward, non-invasive treatments, including aromatherapy, to promote cognitive engagement in educational settings.

Despite increases in concentration and academic achievement, there were only marginal differences in the levels of perceived stress in the experimental conditions. This minimal change can probably be explained by the short-term scent exposure provided in the given research. Previous studies have found that the potential stress-reduction effects of aromatherapy become more evident after extended or repeated exposure, and long-lasting inhalation produces more significant psychological and physiological coping benefits (Malloggi et al., 2021; Ahmad et al., 2019). Besides, personal variation in olfactory sensitivity and baseline stress are also possible sources of variation in outcomes, as not every adolescent will react to scent-induced stimuli. These deliberations indicate that the humble stress-related results do not subordinate the potential value of lavender aromatherapy; in fact, these findings underline the importance of exposure time and personal sensitivity.

New information also indicates that aromatherapy can be most effective when used together with other sensory-based modalities. The existing evidence in comparative research shows that when scent stimulation is combined with other modalities like music therapy, it may have synergistic effects that result in a larger reduction in measures of physiological stress and increased emotional control (Borzoo et al., 2025). It seems that multimodal methods are especially useful in the context of education, where students are constantly subjected to multifaceted stressors and competing cognitive tasks. This means that an olfactory, auditory, or visual approach to intervention can offer a more rigorous method of focus enhancement, anxiety reduction, and general well-being during school.

The use of aromatherapy in academic settings is also supported by meta-analytic results. As recent reviews suggest, inhalation-based aromatherapy is effective in reducing the levels of test anxiety and improving the academic performance of high school and university students (Enwright et al., 2022; Luan et al., 2023). These findings resonate with the current results and indicate that the cognitive benefits of olfactory interventions can be extended across the education process and conditions of study. Additionally, multiple studies emphasizing the significance of the quality of essential oils, their concentration, and the method of delivery emphasize the need to have standardized and carefully controlled aromatherapy regimens to ensure predictable results (Malloggi et al., 2021).

Overall, the findings of this pilot study support the hypothesis that lavender aromatherapy will be effective as a viable, low-cost intervention approach to enhance cognitive function in adolescents. The improvements in focus and academic achievement, though low in immediate stress reduction terms, proved to be significant, showing that the changes could be applied in educational institutions. Further research must focus on longer detail intervention, personalized

volumization of smell, and multisensory format of contribution to maximize cognitive and emotional positive effects. Further studies increasing sample sizes and adding objective physiological indicators of stress (heart rate variability or cortisol levels) would contribute to the evidence base of using aromatherapy in academic areas further.

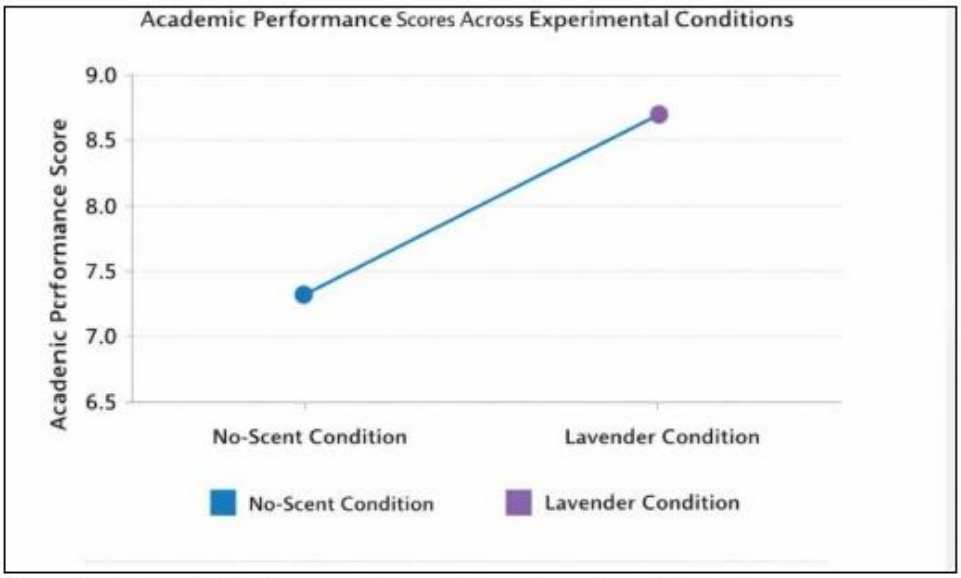

Figure 2: Academic Performance Scores Across Experimental Conditions

This pilot study provides initial results that lavender smell stimulation can help improve concentration and academic performance in academics among teenagers. The subjects showed that attentional control and accuracy in the tasks were better in the lavender tests than in the non-scent condition, implying that aromatherapy could have a positive effect on cognitive performance in the educational environment. The stress-reduction effects in this short-term study were not significant, but the indicated cognitive benefits illustrate the potential of scent stimulation as a low-cost, non-invasive, and simple intervention to promote learning settings.

The results are to be viewed cautiously since the sample size was small (N = 10) and the exposure was limited. Future studies would employ a more diversified population sample of adolescents (towards larger samples), longer or repeated scent exposure tasks, and objective measures of stress, like heart-rate fluctuation or cortisol level. Future investigations may benefit from longitudinal research throughout academic semesters on the effectiveness of aromatherapy treatments in improving concentration, academic performance, and general student well-being.

References

Afghan, R., Heysieattalab, S., Zangbar, H. S., Ebrahimi-Kalan, A., Jafari-Koshki, T., & Samadzadehaghdam, N. (2024). Lavender essential oil inhalation improves attentional shifting and accuracy: Evidence from dynamic changes of cognitive flexibility and power spectral density of electroencephalogram signals. *Journal of Medical Signals & Sensors, 14*(4), 12. https://doi.org/10.4103/jmss.jmss_57_23

Ahmad, R., Naqvi, A. A., Al-Bukhaytan, H. M., Al-Nasser, A. H., & Al-Ebrahim, A. H. (2019). Evaluation of aromatherapy with lavender oil on academic stress: A randomized placebo-controlled clinical trial. *Contemporary Clinical Trials Communications, 14*, 100346. https://doi.org/10.1016/j.conctc.2019.100346

Borzoo, T., Tafazoli, M., Ebrahimzadeh, M., Kazemi-Arpanahi, H., Tabahfar, R., Kamyari, N., Hadideh, F., & Malaekeh, S. M. A. (2025). The effect of aromatherapy and music therapy on blood pressure and heart rate of nursing students before taking the exam. *Scientific Reports, 15*(1), 12783. https://doi.org/10.1038/s41598-025-97199-6

Cai, Y., Chen, H., Zhang, X., Bu, W., & Ning, W. (2025). Benefits of *Gardenia jasminoides* Ellis's floral volatile components on human emotions and moods. *Scientific Reports, 15*(1), 4194. https://doi.org/10.1038/s41598-024-84190-w

Enwright, P., Blank, S., Wells, B. M., Nightingale, L. M., & Torgerud, S. (2022). Effect of lavender and rosemary aromatherapy on test anxiety in chiropractic students. *Journal of Chiropractic Education, 37*(1), 26–32. https://pubmed.ncbi.nlm.nih.gov/36306254/

Luan, J., Yang, M., Zhao, Y., Zang, Y., Zhang, Z., & Chen, H. (2023). Aromatherapy with inhalation effectively alleviates the test anxiety of college students: A meta-analysis. *Frontiers in Psychology, 13*, 1042553. https://doi.org/10.3389/fpsyg.2022.1042553

Malloggi, E., Menicucci, D., Cesari, V., Frumento, S., Gemignani, A., & Bertoli, A. (2021). Lavender aromatherapy: A systematic review from essential oil quality and administration methods to cognitive enhancing effects. *Applied Psychology: Health and Well-Being, 14*(2), 663–690. https://doi.org/10.1111/aphw.12310

Rahmawati, A., Nurida, A., Primadina, N., & Subagyo, R. (2022). The effect of lavender aromatherapy on reducing anxiety levels in students. *KESANS: International Journal of Health and Science, 1*(9), 823–831. https://doi.org/10.54543/kesans.v1i9.91

Seo, J.-Y. (2009). The effects of aromatherapy on stress and stress responses in adolescents. *Journal of Korean Academy of Nursing, 39*(3), 357–365. https://doi.org/10.4040/jkan.2009.39.3.357

Zhang, N., Liu, C., Ren, Y., Li, W., Chen, R., & Gao, W. (2025). Effects of plant aromas on stress recovery and brain activity in university students. *Building and Environment, 273*, 112716. https://doi.org/10.1016/j.buildenv.2025.112716

Rethinking Aid and Empowerment in Africa through the Case of Girls Be Strong

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Introduction

International aid has been given to African countries and has historically been a pillar of development across the globe. Governments, multilateral agencies, and nongovernmental organizations dedicate resources in terms of money, talent, and manpower towards managing poverty, illiteracy, health crises, and infrastructure shortages. However, there is a paradox: despite the common representation of aid as benevolent and transforming, most African nations continue to rely on external forces in their development policies. This leads to a grave question, does aid make people stronger, or is it a hidden agenda to create a dependency that destroys self-efficacy? A growing literature criticizes the underlying premises of aid. Mkandawire (2024) argues that even in the Global South, underdevelopment is not just an interim problem that can be overcome with modernization, and the reason is mainly historical and economic colonization. According to Mkandawire et al. (2024), traditional aid arrangements recreate colonial power systems and thus increase donor dominance and recipient inertia. With these trends continuing into the twenty-first century, it is clear that, although they reinforce inequality, they actually trap it as a paradox. This study is qualitative in nature and does not aim to produce statistically generalizable findings; rather, it seeks to provide a theoretically grounded, illustrative case that contributes to discussions on aid dependency and empowerment.

The moral image of aid is also criticized. Emotional appeals in the form of media campaigns are often called poverty porn, which causes pity at the cost of dignity (Mahmoud et al., 2024; Shabbir et al., 2024). Such images define the attitudes of donors and shape those of beneficiaries into a continuum of inferiority and inactivity.

The paper has assumed a critical global awareness stance by emphasizing that there is a necessity to challenge the current structures that perpetuate global inequality. It claims that although the conventional aid framework sustains dependency, the empowerment-based

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framework, based on dignity, co-creation, and alliances, can build a sustainable future. Based on dependency theory and empowerment theory and the case study of Girls Be Strong (GBS), an initiative by the youth in Uganda, the paper will discuss how a shift in ways of assisting the youth towards partnership turns the aid paradigm. It further looks at how media portrayal, virtuous narration, and active participation of youth in media can transform the hierarchies in the global aid economy.

Structural Dynamics and the Problem of Aid Dependency

2.1 Historical Roots of Dependency

The theoretical background of aid dependency can be found in the dependency theory that opposed the modernization paradigms that prevailed in the mid-20th century. In post-World War II schools of development thought, modernization theorists viewed underdevelopment as a phase to be surmounted by means of Western-style industrialization and foreign aid. This view was reversed by dependency theorists, who were led by Frank (1966). Under this framework, the present-day tendencies of economic and political subordination in Africa can also be explained. Zimmerman (2007) builds on this by asserting that aid can develop into a control system by creating a dependency cycle that glues the country to fiscal policy, governance transformation, and even a social value system. Instead of promoting independence, the aid is likely to entrench its dependencies, whether material or ideological. Fundamentally, what can pass as benevolence structurally is a protraction of unequal power dynamics, a variant of soft imperialism, by virtue of aid dependency.

2.2 Contemporary Reflections of Dependency

Dependency in Africa can be seen not only in the economic system but also in political and social setups as well. As Mkandawire, Kayembe, and Katombosola (2024) say, the continental overreliance on foreign financing is termed an aid economy. The productivity of this model does not complement locally based productivity. It destroys policy priorities and undercuts accountability. The reliance on governments that rely on aid takes less account of the development of an internal revenue, and thus, the incentive to reach higher levels of safety and innovation in governance is less intense. Under conditions such as the budget of a state being majorly funded by donors, like in most states of sub-Saharan Africa, the outer demands restrict the inner choice. The second problem, as reported by Mkandawire et al. (2024), is that aid corrupts accountability. Most governments are answerable to donors but not the citizens. This addiction lies beyond the

economic, into the moral andpolitical soul of government. It also leads to a psychological addiction under which communities come to the assumption that they must be saved by someone outside.

These problems reveal why it is necessary to shift aid to partnership instead of charity. The change has to do away with the hierarchical relations of donors and recipients and create fair mechanisms that can improve strength and not dependency. Critical Global Awareness challenges us to begin to think of these structures as intended control systems, not as unlucky by-products, but as in need of a mindful reorientation.

Theoretical Frameworks: Dependency and Empowerment.

3.1 Dependency Theory

Latin American post-colonial theorists originally conceived dependence theory, which was later theorized by African writers. It opines that global capitalism institutionalizes inequality that separates the world into core and periphery. Frank et al.'s (1966) concept of the development of underdevelopment explains how peripheral states can never become developed because the existence of their economies can be described as being satellite to the industrialized states. This relationship is sustained through the imbalance of trade and dependency legitimizing ideologies. Nafiah (2024) goes much further with this criticism, addressing modern aid. She claims that foreign aid is more inclined to cause dependency since it is provided with the conditions of the donors, which interferes with the local decision-making. The so-called help is a dirty tool for extending dependence, especially when donors dictate the development agenda. Such imbalance sustains relations of giving and receiving, continuing the illusion of good.

The dependency theory has been used to interpret the perpetuation of colonial legacies in global development policies in Africa. Even participatory, as it is called, may replicate the top-down approaches in cases where local actors are not able to influence the design or implementation. The identification of this imbalance is critical towards shifting to the truly emancipatory cooperation where African agency becomes central.

3.2 Empowerment Theory and Alternative Models

The theory of empowerment dwells on agency, participation, and self-determination. It came about in the 1990s as a response to dependency thinking based upon community psychology and participatory development studies. According to Zimmerman (1995), empowerment is an increase in the capacity of individuals to make judgments and exercise control over their lives. It

consists of psychological empowerment (self-efficacy, self-confidence), organizational (capacity of collective action), and community empowerment (structural participation in decision-making). Miyano (2021) applies those concepts to the development of Africa. He seeks authentic improvement by discarding externally determined agendas for locally determined plans. Empowerment is not simply a giving out of resources here but a giving out of power to be passed over from donor to community, planner to participant. It also fits the theory of social entrepreneurship and youth innovation, as the young individuals identify local needs, design solutions, and implement them.

Empowerment theory contrasts the hierarchical aid model by encouraging horizontal relationships with more emphasis on collaboration than on control. Here, a success is not one where a certain number of aid projects have been completed, but one where autonomy and resilience have been created. When extended to projects like Girls Be Strong, the theory of empowerment demonstrates the potential of participatory design and co-creation to disrupt dependency models and rejuvenate development through joint growth.

Case Study: Girls Be Strong (GBS) Project

4.1 Overview of GBS

Girls Be Strong (GBS) is a youth-driven project established by Korean school-going children that reflects the empowerment-based growth. It works in Uganda, where it provides vocational training to single mothers, learning sewing and design, and assists their children to get a school education through its Hope Hill program. The project has been developed over a period of over four years and has involved consistent cooperation, repeated visits, and prolonged involvement. GBS is an indication of movement to mutual learning and co-creation instead of traditional donor-recipient models.

Unlike most aid interventions, which think of African communities as passive recipients, GBS presents the locals as partners and collaborators. The initiative creates a self-reliance platform through skill development, income-generating opportunities, and education. Its young leadership also disrupts the traditional North-to-South structure and shows that the solidarity at the global level does not have to be vertical, but can be horizontal.

4.2 Education and Self-Reliance

GBS is based on a two-track model where both adult training in vocation and the education of children are included. Single mothers are introduced to a patterned sewing course where they

acquire design, cutting, and tailoring skills in making something to sell. This is more in line with the theory of empowerment: rather than being provided with gifts, they are given abilities to earn and support their families. Simultaneously, their children are provided with educational support which generates an intergenerational approach, breaking poverty and dependency cycles.

According to Adewole (2022), skill-based empowerment is crucial in the attainment of Africa Agenda 2063's objective of inclusive development and sustainable livelihoods. GBS can thus be considered as a welfare program as well as a social entrepreneurship incubator. It reveals how empowerment can be achieved through the outsourcing of other parties without forced dependency. Through economic and educational self-reliance, GBS can fill the aid-empowerment gap, and this is an indication that co-designed interventions can bolster dignity and autonomy.

4.3 Ethical Partnership and Co-Creation

The hallmark of GBS is the reconceptualization of partnership in terms of its ethical form. Instead of viewing volunteers as saviors and Ugandan mothers as victims, the program operates on the principles of co-creation and is supported by equality and reciprocity. Through sharing knowledge and culture, volunteers and participants will together redefine development as a shared activity. Ethical issues of representation are also taken care of in this model since they reject the discourses of victimhood.

Ethical storytelling as a development practice emphasized by Mahmoud and Nang (2024) and Nafiah (2024) has the key place in empowerment. GBS presents the ingenuity, sturdiness, and initiative of actors and thus challenges the reductionist images of traditional aid media. By so doing, GBS does not only change the ways of livelihood but also puts to the test the symbolic frameworks conducive to dependency, an approach that would provide a model of youth-driven moral growth.

The Ethical and Media Issue in Aid

5.1 Poverty Porn and Its Impact

The media is a key factor in how the world views Africa and aid logic. Heartrending images used to raise Helf-Mitleo, the rhetoric of poverty porn, are not a new construct in humanitarian marketing. According to Shabbir et al. (2024), such images are designed in a specific way to maximize donations through emotional appeal. On the contrary, they make subjects passive by depriving them of agency and complexity.

Mahmoud and Nang (2024) build on this claim by showing that in addition to the disrespectful relayed message, the existence of these pictures erodes the nature of aid. The images make the recipients appear powerless, and this makes the people who watch the images and possibly the recipients themselves see that they have an innate sense of being unable to actively improve themselves. This washing away of autonomy is strengthening a dependency discourse. Additionally, poverty porn propagates the savior complex, on which the global aid market depends, and thus fixes the dominance and moral superiority of donors.

5.2 Media Representation Ethics: Ethical Alternatives

The only way of combating these dynamics is to alter the morality behind these narratives. Nafiah (2024) promotes ethical digital literacy and storytelling that preempts dignity, participation, and empowerment. The ethical aspect makes people human, and the community should be viewed as change agents and not figurative objects. The practices of the media based on communication and consensus are used to overcome the culture of dependency as it was founded

The intersection of these ethical values is in line with the idea of agency and co-creation proposed by the empowerment theory. It also mirrors the decolonizing communication tendencies in the world, where the voices of the Global South would demand their agency and will. In the case of programs such as GBS, this must include changing the image of suffering to a display of strength, changing the perception that the world has of Africa, and that the Africans have of themselves.

Youth Empowerment as a Pathway to Independence

6.1 Aligning Programs with Youth Needs

The core of sustainable development is youth empowerment. Mbugua, Kanyinga, and Mbatia (2024) further contend that participation-based, local, or youth-set empowerment programs tend to succeed in most cases and instances. Young people comprise the largest segment of the population in most African settings, but they are sidelined when making decisions. The programs created without their participation run the risk of replicating the issue of dependency, telling the youth what they need but not what they want to accomplish.

The designs on empowerment also focus on co-design and constant communication. Programs that use youth as leaders, instead of beneficiaries, make them feel as if they own the program, a factor that enhances performance results. This model may be observed in the GBS model as Korean youth volunteers interact with the Ugandan youth in the creation of the partnerships of the cross-cultural collaboration on equal terms. Such models are based on the capacity of

solidarity between the youth to move past the conventional donor-receiving relationships in creating shared innovation and learning.

6.2 Skill Development and Entrepreneurship

The major way of moving out of aid dependency and into sustainable livelihoods depends on skill development and entrepreneurship. Adewole (2022) asserts that social entrepreneurship can provide a way of realizing the socio-economic vision of Agenda 2063 in Africa, as it provides youth with the tools to build opportunities instead of waiting to receive them. On the same note, Geza, Ngidi, Slotow, and Mabhaudhi (2022) observe that when programs are done by youth and rooted locally, their involvement in agriculture and rural value chains generates innovation and self-reliance.

GBS reflects these lessons with the emphasis on capacity building rather than charity. Through sewing, designing, and creative enterprise, participants are able to gain not only income-generating abilities but also confidence and leadership. This is in line with the 3 dimensions of empowerment, which include psychological, organizational, and community-based, which are depicted by Zimmerman (1995). In this respect, empowerment exists in a circle: competence breeds confidence, confidence breeds agency, and independence breeds competence. By positioning youth and women as value suppliers, such projects as GBS disrupt the structural sources of dependency and embark on a new path of development in Africa.

Rethinking Development Paradigms

7.1 Critique of Western-Led Aid Models

Western-led assistance critique shows that the issue is not assistance but its construction. The analysis of the global economic systems presented highlights the reliance of wealth accumulation in the North and the South on extracting resources and exploiting labor. This reasoning continues in the development assistance, where hierarchical relationships are frequently replicated by conditionalities and the dominance of donors.

According to Mkandawire et al. (2024), the aid economy replaces organic growth by financing repetitive spending instead of productive sectors. This establishes dependency cycles at the local level where innovation is hindered. Furthermore, the patterns of Western aid tend to implement forms of governance or cultural standards that do not correspond with the situation on the ground, which is a kind of epistemic colonialism. Unless these structural imbalances are addressed, any additional aid will only increase dependency as opposed to reducing it.

7.2 Participatory and Locally Driven Approaches

Conversely, the participatory and locally based strategies redefine development as a participatory process by being culturally relevant and agentic. Miyano (2021) proposes models that put local actors at the center and develop indigenous knowledge. These strategies also place the emphasis on capacity building instead of resource transfer by placing the communities as partners, not receivers.

When empowerment frames are integrated with participatory development, they yield more sustainable results since the vulnerability in terms of agency and ownership is restored. It is also aligned with the global ideals of decolonized development that aim at equalizing power relations between North and South. Within this context, projects like GBS can be of practical use as a good example of participatory development in practice, in which youth and the local community can co-design solutions that mirror collective aims as opposed to prescriptions.

Toward Sustainable Empowerment-Based Development

According to the above analysis, the empowerment-based model of development in a sustainable way has three strategies that are interdependent and alter one another: building of capacity, the change in the ethical narrative, and a reform in a structure.

First, capacity building involves investment in education, entrepreneurship, and technical skills, which helps in self-dependence. According to Adewole (2022) and Geza et al. (2022), skill development and social enterprise are necessary and significant to reduce the dependence on external support. The programs are no longer to be a temporary support; instead, the switch should be towards the system that will stimulate innovation and sustainability.

Second, symbolic structures of such dependency need to be deconstructed through narrative change. Nafiah (2024) also adds weight to dignity-based media behaviors that reflect people in the reflective light of creative and potential forces. The development communication itself is an empowered space through redefining the expression of what might be described as a way of helping the poor, but rather as the growth partner.

Third, structural reform should involve reorganizing the aid relations of the international institutions and the donors. This entails the conversion of conditional funding to fair collaborations that embrace local decisions. The GBS case shows that empowerment, ethical storytelling, and collaborative practice can be synergetic: the participants are treated as the producers, the volunteers as the partners, and they all can learn together. By including this into

the mainstream of the development process, then development will no longer be just a transaction but a mutual enabling process.

Conclusion

The structural imbalance of the donor and recipient country explains the systemic frailty of the global aid system as much as decades of development aid has been directed. The dependency theory exposes the reality that inequities are structuralized and not by feeling but by the fact that historical and economic power inequity perpetuates dependence. Also, ethical dimensions of assistance, photos of beneficiaries included, are prone to further reinforce these inequalities with agency denial and victimizing helplessness.

Nevertheless, the empowerment theory and programs such as Girls Be Strong present a good alternative. By way of its educative focus on the acquisition of skills and ethical collaboration, GBS transforms aid from a top-down activity of charity to a horizontal activity of co-creation. It shows that once development is harnessed based on dignity and participation, it can be used as an instrument of emancipation versus control.

The way ahead should finally design development to be seen as an empowerment, not as gifting those in power to those completely without it, but as a process respecting the local knowledge, creativity, and agency. As long as aid turns into partnership, then dependency will be replaced by dignity, and finally, the historical story of development in Africa will be written by the people to whom the whole history pertains.

References

Adewole, A. A. (2022). Social entrepreneurship as solution to youth empowerment and socio-economic wellbeing in Africa: Pathway to achieving the Africa's Agenda 2063. *People Centred – The Journal of Development Administration, 7*(3), 91-99.

Frank, A. G. (1969). *Capitalism and Underdevelopment in Latin America*. Monthly Review Press.

Geza, W., Ngidi, M. S. C., Slotow, R., & Mabhaudhi, T. (2022). The dynamics of youth employment and empowerment in agriculture and rural development in South Africa: A scoping review. *Sustainability, 14*(9), 5041. https://doi.org/10.3390/su14095041

Mahmoud, M. A., & Nang, D. Y. (2024). Fundraising through poverty porn: Ethical concerns. *Journal of Philanthropy & Marketing*, 2024(3). https://doi.org/10.1002/nvsm.1869.

Mbugua, C., Kanyinga, K., & Mbatia, P. (2024). Inclusion and integration of youth needs in youth empowerment programmes: A mixed-method study of Nairobi and Trans Nzoia counties. *European Scientific Journal, ESJ, 20*(29), 29. https://doi.org/10.19044/esj.2024.v20n29p29

Miyano, S. (2021). Youth development in Africa: From the current paradigm to the alternative. *Journal of Human Security Studies, 10*(1), 21-38. https://doi.org/10.34517/jahss.10.1_21

Mkandawire, T., Kayembe, A. E., & Katombosola, B. (2024). Does development aid help poor countries to develop? A critical analysis of Africa's situation. *American Scientific Research Journal for Engineering, Technology, and Sciences*.

Nafiah, H. (2024). Poverty porn, digital literacy and media ethics: Bridging dignity gaps from exploitation to empowerment. In *Proceedings of the International Conference on Communication, Culture and Media Studies (CCCMS)*.

Shabbir, H., Bennett, R., Kottasz, R., Vijaygopal, R., Gardasz, B., & Adams, J. (2024). Poverty porn as humanitarian business: The effects of framing, affect intensity and spokesperson characteristics. *Business & Society*.

Zimmerman, M. A. (1995). Psychological empowerment: Issues and illustrations. *American Journal of Community Psychology*, 23(5), 581–599.

Effects of Community-Based CPR Education on Residents' Performance Confidence and Awareness of CPR Education Necessity

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Abstract

The purpose of this study was to empirically examine the effects of a community-based cardiopulmonary resuscitation (CPR) education program on residents' performance confidence and awareness of the necessity of CPR training. Although CPR is widely recognized as a critical intervention for improving survival and neurological outcomes after sudden cardiac arrest, previous research in South Korea has focused predominantly on students or healthcare professionals, resulting in limited evidence regarding educational outcomes among community-dwelling adults. To address this gap, this study evaluated changes in performance confidence and awareness before and after participation in a structured, practice-oriented CPR program delivered within a residential community. The analysis examined whether CPR training enhanced residents' confidence in performing CPR and whether it increased their recognition of the importance of CPR education for personal and community emergency preparedness. The findings provide empirical support for community-based CPR education as an accessible and sustainable public health strategy to strengthen emergency response capacity at the local level.

Keywords: Cardiopulmonary resuscitation (CPR); community-based education; performance confidence; awareness; CPR training necessity; emergency preparedness; public health education

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Introduction

Sudden cardiac arrest requires rapid bystander intervention to improve survival and neurological outcomes. Cardiopulmonary resuscitation (CPR) performed within the early minutes the "golden time" is essential for preventing irreversible brain injury. In South Korea, approximately 65% of out-of-hospital cardiac arrests occur in private homes, making it crucial for community residents to possess basic CPR skills and confidence (Korea Disease Control and Prevention Agency, 2023).

Although the value of CPR education is well established, most domestic CPR training programs have focused on healthcare professionals or students, resulting in limited evidence regarding outcomes among community-dwelling adults (Cho et al., 2012; Lewis et al., 1997). Unlike countries that widely implement community CPR education, such as the United States, regular CPR training opportunities for the general public remain limited in South Korea (American Heart Association, 2005).

Community-based CPR programs implemented within familiar residential settings may improve accessibility and participation among adults who do not typically engage in formal training. Such programs can strengthen individual preparedness and enhance local emergency response capacity. Therefore, this study examined the effects of a community-based CPR education program on residents' performance confidence and awareness of the necessity of CPR training by comparing outcomes before and after the program.

Research Hypotheses

Based on this research framework, the following hypotheses were established:

- **H1**: Residents' performance confidence will differ significantly before and after CPR training.
- **H2:** Awareness of the necessity of CPR training will differ significantly before and after the program.

Method

2.1 Participants

This study targeted local residents living in Gangnam-gu, Seoul, who voluntarily participated in a cardiopulmonary resuscitation (CPR) education program jointly organized by the Gangnam-gu Public Health Center. Among the total of 45 participants, data from 34 residents who completed both the pre- and post-training surveys were included in the final analysis. Eleven responses were excluded due to incomplete post-survey submissions. All participants were informed of the study purpose and procedure and voluntarily consented to participate in the online survey

2.2 Program Description

The community-based CPR education program was held on April 11, 2025, in the resident meeting hall. The three-hour session included:

1. theoretical instruction on cardiac arrest and CPR procedures,
2. automated external defibrillator (AED) training, and
3. repetitive hands-on practice using dummy.

Training was delivered by instructors certified by the Korea Association of Cardiopulmonary Resuscitation (KAHA).

2.3 Measurement Tools

Performance confidence and awareness were measured using an instrument adapted from the 10-cm Visual Analogue Scale (VAS) originally developed by Cho et al. (2012). To enhance usability for community residents, the VAS format was converted into a 10-point Likert-type scale ranging from 1 ("not confident/not necessary") to 10 ("very confident/very necessary"). The instrument consisted of two domains:

- **CPR Performance Confidence**: nine items assessing confidence in performing the major steps of CPR.

- **Awareness of CPR Training Necessity:** three items measuring perceived importance of CPR education for personal emergency response, for others, and for regular community

2.4 Data Analysis

Data were analyzed using SPSS Statistics 26.0. Descriptive statistics summarized participant characteristics. Paired-samples t-tests assessed pre–post differences in performance confidence and awareness. Statistical significance was set at $p < .05$ all analyses.

Result

3.1 General Characteristics

A total of 34 residents participated in the final analysis. Among them, 15 (44.1%) were male and 19 (55.9%) were female. Twelve participants (35.3%) were under 50 years of age, and 22 (64.7%) were 50 or older. Additionally, 12 participants (35.3%) had previous CPR training experience, while 22 (64.7%) had no prior exposure. Participant characteristics are summarized in Table 1.

Table 1. General Characteristics of Participants

Variable	Category	N (%)
Gender	Male	15 (44.1)
	Female	19 (55.9)
AGE	Uuder50	12(35.3)
	Over50	22(64.7)
Previous CPR Training	Yes	12 (35.3)
	No	22 (64.7)

3.2 Changes in CPR Performance Confidence

Paired-samples t-tests indicated significant improvements across all nine CPR performance confidence items following the training. Mean scores for each item increased from pre- to post-training with statistical significance ($p < .001$). The total performance confidence score increased from 3.04 before training to 7.89 after training, $t(33) = -14.14$, $p < .001$. Detailed results are presented in Table 2.

Table 2. Paired t-test Results for CPR Self- Efficacy

Confidence	Pre-test (M)	Post-test (M)	*t*	*p*
Early assessment	2.85	7.27	-12.06	<.001
Response checking	2.97	7.53	-12.98	<.001
Calling for help	5.62	9.12	-10.51	<.001
Airway maintenance	2.56	6.74	-10.58	<.001
Breathing check	3.44	7.88	-12.56	<.001
Artificial respiration	2.09	6.06	-9.73	<.001
Pulse check	3.74	7.77	-12.81	<.001
Chest compression	2.94	7.94	-12.62	<.001
AED use	2.18	7.62	-12.28	<.001
Total Mean	**3.04**	**7.89**	**-14.14**	**<.001**

3.3 Changes in Awareness of CPR Training Necessity

Paired-samples t-tests also revealed significant increases across all three awareness items after the training ($p < .001$). The total awareness score increased from **5.82** pre-training to **9.57** post-training, $t(33) = -10.36$, **$p < .001$**. Detailed results are presented in Table 3.

Table 3. Paired t-test Results for Awareness of CPR Training Necessity

Confidence	Pre-test (M)	Post-test(M)	*t*	*p*
emergency response	5.53	9.32	-7.86	< .001
Need for others' CPR education	6.03	9.77	-8.10	< .001
Need for regular CPR education	5.91	9.62	-9.72	< .001
Total Mean	**5.82**	**9.57**	**-10.36**	**< .001**

Discussion

This study examined the effects of a community-based CPR education program on residents' performance confidence and awareness of the necessity of CPR training. Both outcomes showed significant improvement after the training. The increase in performance confidence aligns with previous findings that structured and hands-on CPR training enhances learners' confidence and performance (Cho et al., 2012; Lewis et al., 1997). This supports Bandura's view that mastery experience is essential for strengthening performance confidence.

Awareness of CPR training necessity also improved, reflecting participants' heightened recognition of CPR as a critical life-saving intervention. This is consistent with the American Heart Association (2005), which emphasizes early CPR as a key factor in improving survival. Given that most out-of-hospital cardiac arrests in Korea occur in private homes (Korea Disease Control and Prevention Agency, 2023), increased awareness among community residents is particularly meaningful. They recognized CPR education as not only personally beneficial but also socially necessary, emphasizing the value of regular and community-level training.

This attitudinal change suggests that accessible education programs can raise collective responsibility and preparedness in health emergencies Although limited by a small, single-site sample and short-term evaluation, the study provides evidence that community-based CPR programs delivered in familiar residential settings can effectively enhance public preparedness. Future research should examine long-term outcomes and broader participant groups. These findings should be interpreted as reflecting short-term effects observed among residents from a specific local community.

Conclusion

This study confirms that community-based CPR education significantly improves residents' CPR performance confidence and awareness of the importance of CPR training. These findings highlight the value of accessible CPR programs as a practical strategy to strengthen community emergency readiness. Expanding such initiatives and assessing long-term retention may further enhance public capacity to respond effectively to cardiac emergencies.

References

American Heart Association. (2005). Guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. Circulation, 112(24 Suppl), IV1–IV203. https://doi.org/10.1161/CIRCULATIONAHA.105.166550

Cho, M. K., Lee, M. H., & Park, H. R. (2012). The effects of CPR training on nurses' knowledge, performance, and confidence. Journal of Korean Academy of Fundamentals of Nursing, 19(3), 312–320.

Flaherty, L. (2000). Training community members in cardiopulmonary resuscitation: Long-term impact and retention. Resuscitation, 44(2), 139–147. https://doi.org/10.1016/S0300-9572(00)00121-3

Korea Disease Control and Prevention Agency. (2023). National cardiac arrest registry report. Cheongju, Korea: KDCA.

Lewis, R. M., Fulstow, R., & Smith, G. (1997). Resuscitation training for schoolchildren: A comparison of instruction methods. British Medical Journal, 314(7080), 619–622. https://doi.org/10.1136/bmj.314.7080.619

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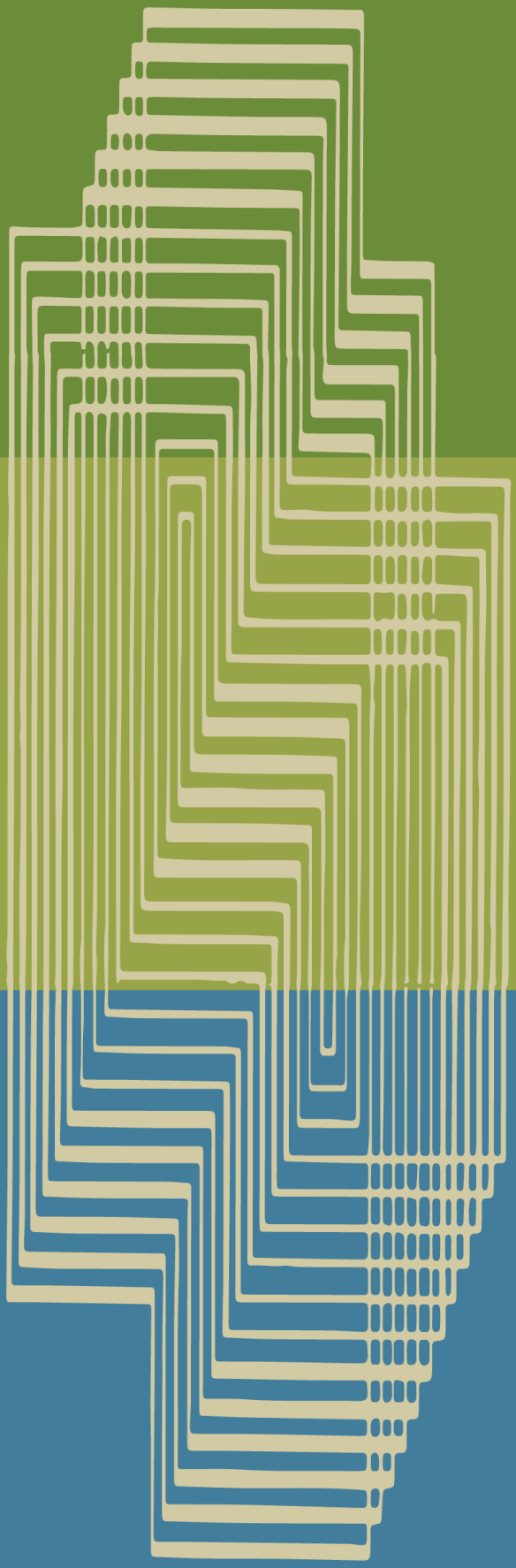

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