



THE EFFECT OF THE GUESSING THE SOUND (GATSU) GAME ON ANDROID MOBILE PHONES ON THE DECREASE IN AUDITORY HALLUCINATIONS IN SCHIZOPHRENIA

Rizky Gumilang Pahlawan^{*1}, Istianah¹, Ahamd Arifin¹, Syifa FA, Ichi Susanti²

¹Institut Kesehatan Rajawali, Jl. Rajawali Barat No.38, Maleber, Andir, Bandung, Jawa Barat 40184, Indonesia

²RSJ Provinsi Jawa Barat, Jl. Kolonel Masturi No.KM. 07, Jambudipa, Cisarua, Bandung Barat, Jawa Barat 40551, Indonesia

^{*}rizkygumilang5@gmail.com

ABSTRACT

Handling of auditory hallucination symptoms in schizophrenia patients is very important because schizophrenia is a chronic severe mental disorder that lasts throughout life and has safety risks. Efforts to treat hallucinations other than pharmacological therapy need to be combined with non-pharmacological therapy. The non-pharmacological therapy method that has been present at this time still uses a direct method and requires several components for its implementation so that it needs an update effort with an accessible and efficient method, one of which is the Android-based voice guessing game (GATSU). The purpose of this study was to determine the effect of the Android-based voice guessing game (GATSU) on reducing auditory hallucinations in schizophrenia patients. This study used a quantitative approach with a quasi-experimental design with a Nonequivalent Control Group. The experimental group was given treatment with an Android-based mobile phone GATSU 5 times with a duration of 5-10 minutes each time and the control group was given treatment to guess images and sounds directly with 5 times with a duration of 10 minutes. Sample in this study was 30 respondents and sampling technique in this study used accidental sampling sampling divided into 2 groups 15 experimental groups and 15 control groups. The measuring instrument used auditory hallucination rating scale (AHRS) The instrument has through validity and reliability testing and has been declared valid and reliable for measuring auditory hallucinations. The results of the study obtained hallucination scores in the experimental group with a median pretest score of 42 and a median posttest score of 7. in the control group the median pretest score was 30 and a median posttest score of 27. Based on the results of the Wilcoxon test in the experimental group, a P-Value of 0.001 was obtained, the control group obtained a P-Value of 0.255. And in the experimental group and the control group, a Value of 0.001 was obtained. It can be concluded that Gatsu Therapy has a significant effect in reducing hallucination scores compared to the control group.

Keywords: android mobile phone; auditory hallucinations; GATSU; schizophrenia

How to cite (in APA style)

Pahlawan, R. G., Istianah, I., Arifin, A., FA, S., & Susanti, I. (2026). The Effect of the Guessing the Sound (GATSU) Game on Android Mobile Phones on the Decrease in Auditory Hallucinations in Schizophrenia. *Indonesian Journal of Global Health Research*, 8(1), 837–844. <https://doi.org/10.37287/ijghr.v8i1.479>.

INTRODUCTION

Schizophrenia is a severe, chronic mental disorder that lasts throughout life (Stuart GW, 2016). There are 24 million cases of schizophrenia worldwide, or 1 in 300 people (0.32%). This figure is 1 in 222 people (0.45%) among adults. This condition is not as common as other mental disorders (World Health Organizations, 2022). The incidence of schizophrenia in West Java reached around 58,510 in 2023. (BKPK, 2023) Based on data obtained from the West Java Provincial Mental Hospital, schizophrenia patients have the largest number among other medical diagnoses. In the last 3 months, there were 133 people. The most common and frequently found symptom of schizophrenia is auditory hallucinations. Auditory hallucinations are a condition in which a person hears voices that are not actually there. These voices can be conversations, instructions, music, or other sounds (Sheila L. Videbeck, 2019). Hallucinations need to be treated immediately and seriously, if hallucinations are not handled properly can pose a risk to the safety of the patient himself, others and also the surrounding environment (Keliat, 2010). The content of auditory hallucinations in acute patients has a negative nuance that contains taunts, threats and orders to harm themselves or others (Patel & Goyena, 2019). Efforts to treat hallucinations in addition to pharmacological therapy need to be combined with non-pharmacological therapy that is accessible

and efficient, one form of non-pharmacological therapy is with the Android Mobile phone-based Voice Guessing Game (GATSU).

The voice guessing game (GATSU) is an audio-visual distraction technique through an Android-based mobile phone game designed to guess the sound and guess the image from the sound displayed. Physiologically, the brain has a limited attention capacity, and when we allocate our attention resources to one thing, we inherently have fewer resources for other things (Marois & Ivanoff, 2005). GATSU uses the Calver Kids voice guessing application, this application has various interesting sounds and features that increase enthusiasm in playing this game. By consciously shifting the focus of attention from misinterpreted internal signals (hallucinations) to real and interesting external stimuli, the brain allocates its cognitive resources to the new stimulus. This involves activating the prefrontal cortex to control attention, modulating activity in sensory areas associated with hallucinations, and releasing positive neurotransmitters that reduce emotional distress. Ultimately, this helps patients regain control over their perceptions and reduces the impact of hallucinations.

The results of the study revealed that video games can produce a decrease in the activity of the left posterior superior temporal gyrus (STG). Previous neurocognitive and neuroimaging models stated that auditory verbal hallucinations (AVH) arise due to increased activity in the STG (Orlov et al., 2018). Previous research conducted by Pahlawan RG found that activities that can reduce hallucinations are by playing smartphone games (Pahlawan RG, 2024). The results of the literature review showed an increase in working memory, perception, reasoning, attention, executive function and problem solving. All literature regarding the application of video games obtained had significant results in improving cognitive dysfunction in schizophrenia patients. Video games are also an interesting research path (Siti Fauziah Yani et al., 2018). The implementation of GATSU is simpler and easier and more practical compared to other distraction techniques, the benefits of GATSU in addition to reducing hallucinations can improve cognitive function. Current technology is increasingly developing every individual is familiar with mobile phones even hallucinating patients with schizophrenia are able to recognize and play mobile phones. Efforts made in the form of distraction need to be aligned with the times to make it easier and more practical in its use The purpose of this study was to determine the effect of the Android-based voice guessing game (GATSU) on reducing auditory hallucinations in schizophrenia patients.

METHOD

Study This is study quantitative with design quasi experiment. The research design used is Nonequivalent Control Group Design. This design using two groups, namely group experiments and groups control. Group experiment given treatment with GATSU based on android mobile phone and group control given treatment guess picture and sound in a way directly. Technique taking samples in research This using accidental sampling. The number samples used in study These are 30 respondents. 15 groups experiments and 15 groups control. The measuring instrument used in the study AHRS The instrument has through validity and reliability testing and has been declared valid and reliable for measuring auditory hallucinations (Hoffman et al., 2003).

RESULT

Table 1.
Respondent characteristics (n= 30)

Characteristics	f	%
Age	< 30	10
	31-50	17
	>50	3
Gender	Male	20
	Female	10

Based on table 1, the gender of the respondents is mostly male, with each group having 10 (66.7%) respondents and the age range for the most respondents is 31-50 years. Based on table 2, the pretest scores for the experimental group's hallucinations ranged from 30 to 44, with a median of 42

indicating that the majority of respondents showed a fairly high hallucination score. The posttest scores for the respondents' hallucinations after GATSU were administered ranged from 5 to 20 , with a median of 7 indicating that the majority of respondents showed a fairly low hallucination score.

Table 2
Distribution of Pretest and Posttest Hallucination Scores for the Experimental Group (GATSU based on Android Mobile Phone)

Variables	N	Median	Min - Max
Pretest Hallucination Score of the Experimental Group	15	42	(30 – 44)
Post-test Hallucination Score of Experimental Group	15	7	(5 – 20)

Table 3
Distribution of Pretest and Posttest Hallucination Scores for the Control Group (Guess the Picture and Sound Directly)

Variables	N	Median	Min - Max
Post-test Hallucination Score of Control Group	15	30	(13 – 44)
Posttest Hallucination Score of the Control Group	15	27	(23-30)

Based on table 3, in the control group, the pre-test results obtained a score range of 13 to 44 and a median value of 30, this indicates that the majority of respondents showed a fairly high hallucination score. In the control group, the post-test score of respondents' hallucinations after manually guessing the picture and sound obtained a score range of 23 to 30 and a median value of 27, this indicates that the majority of respondents showed a moderate hallucination score.

Table 4.
Hallucination Score before and after GATSU (Sound Guessing Game) Based on Android Mobile Phone in Schizophrenia Patients in the Experimental Group

Variables	N	Median (Min – Max)	P Value
Pre-test Hallucination Score of Experimental Group		42 (30 – 44)	0.001
Posttest Hallucination Score of Experimental Group	15	7 (5 – 20)	

Based on table 4, the results of the Wilcoxon Test before and after Gatsu was administered with a P- Value of 0.001, it can be concluded that Gatsu Therapy has a statistically significant effect in reducing hallucination scores in patients in the experimental group, as evidenced by the difference between hallucination scores before and after Gatsu therapy, the median score dropped from 42 (moderate-severe) to 7 (mild).

Table 5
Hallucination Score before and after playing the Guess the Picture and Sound Game directly in the Control Group of Schizophrenia Patients

Variables	N	Median (Min – Max)	P value
Pretest Hallucination Score of Control Group	15	30 (13 – 44)	0.255
Posttest Hallucination Score of Control Group		27 (23 – 30)	

Table 6.
Hallucination Score of Intervention Group and Control Group

Variables	N	Median (Min – Max)	P value
Hallucination Score of the Experimental Group	15	42 (30 – 44)	0.001
Control Group Hallucination Score		7 (5 – 20)	

Based on table 5, the results of the Wilcoxon Test before and after guessing the pictures and sounds directly with a P- Value of 0.255, it can be concluded that there is no significant difference between the pretest and posttest hallucination scores in the control group, even though there was a decrease in the hallucination scores. Based on table 6 , the results of the Wilcoxon test for the experimental group and the control group obtained a p-value of 0.001 <0.05, meaning there was a significant difference between the hallucination scores of the experimental group and the control group. The experimental group (Gatsu) experienced a significant decrease in hallucination scores compared to the control group. This indicates that the intervention given to the experimental group was effective in reducing hallucinations, while the control group did not show any significant changes.

DISCUSSION

Hallucination Score Pretest group experiment (GATSU based on Android Mobile phone) and group control (guess picture and sound manually). Respondents in the study This part big type sex man man based on the data received from medical records of the Provincial Mental Hospital West Java month January until August 2025 in part big various sex men. Incident schizophrenia in this world more height in men compared to women, with ratio almost 1.4:1 (Li et al., 2022). Schizophrenia factor related with type sex influenced by factors biological that is morphology brain, risk genetics and function neuroprotective from estrogen effects are facilitated by gonadal and adrenal hormones, so that depending on the type sex individual (Chen et al., 2021). Respondents in the study own range age from 25 – 68 good group control and group intervention. Schizophrenia in men is 3.2 - 4.1 years more beginning than in women (Fernando et al., 2020). Prevalence schizophrenia more high among man aged <40 years, with incident peak between 20 and 29 years old (Giordano et al., 2021). Gradient type sex is the opposite For Woman with schizophrenia higher prevalence tall found For those aged > 40 years, with two peaks incidents - the first at the age of 20-39 years and the second in the perimenopausal (Mcgrath et al., 2004).

Pretest Results of the Intervention Group and the Control Group control score hallucinations shows high scores of 42 and 30 due to criteria inclusion in research This is respondents with hallucinations acute. Hallucinations hearing is the most common symptom in patients schizophrenia (Stuart GW, 2016). In the group intervention and group control hallucinations average respondent voice appear every moment or Keep going Continuous and Sound appears very in one hour marked with at the moment measurement pretest, patient sometimes speak alone, laughing Alone, even screaming. Hallucinations in schizophrenia can appear continuously Because imbalance system chemistry brain neurotransmitter especially dopamin and glutamate (Yuanjun et al., 2024). Hallucinations in respondents are also influenced by the presence of stress environment Because part respondents feeling foreign treated At home Sick soul. according to Townsend (2011), hallucinations influenced by internal factors and external factors external, environment is one of the factor external. In line with research conducted by Rizky Gumilang 2024 triggers from hallucinations distracted by stimuli external like environment and place stay (Rizky Gumilang Pahlawan, 2024).

Hallucinations with range score tall enter in category phase final hallucinations that is Conquering phase The client is already very much controlled by hallucinations, the client looks panic. Its characteristics that is voice or ideas that come threaten if No followed (Sheila L. Videbeck, 2019). hallucinations the Conquering phase occurs Because interaction diathesis – stress: vulnerability biological (genetic, neuroanatomical, neurochemical) interactions with stressors acute / chronic so that circuit the brain that processes perception, emotion and control executive become maladaptive until internal experience felt real and commanding (Stuart GW, 2016). In the research This each respondents own symptom sequelae caused by hallucinations hearing among them is, delusion, deficit maintenance self, behavior vigilance until risk kill self. Hallucination Score before and after GATSU (Guess the Sound Game) based on Android Mobile Phone was carried out on patients Schizophrenia. Measurement post-test in groups experiment done after given GATSU treatment. Treatment given 5 times with time 15 minute game. according to Crawford-Walker et al (2005), distraction effective 3 sessions per week, 15–30 minutes each, focused on core techniques such as ignore voice, self-talk, and distraction attention structured. In line with research conducted by Latifah (2023), distraction sensory given 10–15 minutes during a number of day consecutive For lower intensity and stage hallucinations, showing that intensification term short can useful in some patient (Agus Paryani et al., n.d.). Android based game play for smart phone patient with hallucinations or disturbance psychotic, time playing games on smartphones is better restricted tight safe target is 0–60 minutes per day, broken down become session short 10–20 minutes, only after sleep, drink medicine, activity physical, and routine daily fulfilled, and stopped quick when symptom increase (Raj et al., 2023).

In the research this, Treatment Gatsu given in a way situational, namely quick moment symptom hallucinations appear, so that implementation therapy ongoing during a number of day and adjusted

with condition as well as development respondents during home care sick, treatment new implemented during hallucinatory episodes identified. The most effective distraction given quick moment patient start realize sign beginning or intensification hallucinations hearing, before distress peak and pattern Sleep or attention disturbed (Crawford-Walker et al., 2005). Respondents in the study This has identified time intense occurrence hallucinations so that respondents own timetable in do GATSU therapy. In line with Retno Dw's research (2024), patients with hallucinations show pattern time specific occurrences, with possible episodes occurs in the morning, afternoon or Evening day, as well as at certain hours pattern intensity This noted For map period vulnerable and composing timetable appropriate intervention target in accordance rhythm daily patient (Wulandari et al., 2024). Posts done each finished do therapy Gatsu For evaluate consistency decline from score hallucinations.

Based on Wilcoxon Signed-Rank Test results on score before and after intervention Gatsu , obtained P-Value value of 0.001. This value more small from $\alpha = 0.05$, can concluded Therapy Gatsu in a way statistics influential significant in lower score hallucinations in patients in clogs pok experiment proven with existence difference between score hallucinations before and after given therapy Gatsu median score down from 42 (moderate - severe) to 7 (light). All respondents experience decline score hallucinations. Decline score hallucinations are very significant. The results of the study show guessing game voice Android based has a number of mechanism work that occurs in respondents including 1) Distraction adaptive, Focus on the task guess source voice can divert attention from hallucinations, so that frequency and duration experience voice down at the moment use (Cleveland, 2024). 2) Attention and control exercises cognitive (Ngadiran et al., 2023), Repetitive practice strengthen shifting and focusing of attention (Carter & Wells, 2018), 3) Improvement discrimination auditory Activity recognize and differentiate voice practice track perception auditory disturbance in listeners sound, similar logic training hearing / dichotic. GATSU has the potential help patient schizophrenia with hallucinations hearing through a number of mechanism practice attention selective in sound external, improve discrimination sound, and provide distraction structured that can lower intensity and distress to the internal "voice" when the episode occurs.

Response respondents at the time given Gatsu Almost all over patient spirit and enthusiasm in playing GATSU reflects increased engagement, enjoyment, and arousal during activity said. GATSU is based on mobile phones and has quality more pictures and sound interactive so that interesting when played. Research about experience play show that enjoyment, involvement emotional, and arousal drives intention somebody For Keep going play, exactly as depicted in the very enthusiastic and happy attitude during mobile gaming (Simone Heimann et al., 2022). Video games are also known give benefit emotional term short like improvement atmosphere heart when experience play felt focused and fun (Serrone, 2012). When GATSU is taking place patient show attitude calm and focused play games with established communication with Good, matter This prove that hallucinations decrease or even distracted by GATSU based on android mobile phone. With Divert focus attention in a way aware from misinterpreted internal signals (hallucinations) to real and interesting external stimuli, the brain allocate source Power cognitive response to new stimuli said. This is involving activation prefrontal cortex for control attention, modulation activity in the related sensory area with hallucinations, and release neurotransmitters positive that reduces emotional distress. Ultimately, this help patient get return control on perception them and reduce impact hallucinations. Research results reveals that Video Games are capable of produce decline activity left posterior superior temporal gyrus (STG). Previous neurocognitive and neuroimaging models state that auditory verbal hallucinations (AVH) appear Because improvement activities at STG (Orlov et al., 2018).

Hallucination Score before and after Guess the picture and sound manually on the patient Schizophrenia group Control. In the group control given manual intervention, namely with guess picture and sound use train and voice recorder. The results of treatment This Negative rank 6 was obtained respondents (40%) who scored hallucinations increase after Guess the picture and sound.

There are decline score hallucinations although Still There is part deteriorating patient with Sum of Ranks Negative = 40.00, Positive = 80.00. intervention given Good group control and group intervention focused on reducing distress, increasing control to “voices,” and support family, combined with routine maintenance and evaluation standardized (Fässler et al., 2024). Response during treatment done patient only enthusiastic in 2 minutes First furthermore patient distracted by the cart brought by the researcher Because There is a number of train with various type image. Patient with hallucinations often No focus moment intervention Because attention and networking control cognitively by internal stimuli that feel very important, so that difficult divert focus to task external or conversation therapeutic (Menon et al., 2023). Then patient sigh feel bored Because method train often used like case in point draw writing. In the intervention furthermore There is patients who refuse For given treatment and desire with other treatments. patients hallucinations bored with treatment often appear Because intervention felt monotonous, less meaningful, and not Enough stimulating, while symptom psychosis Alone reduce motivation and tolerance to boredom so that involvement decrease (Seiler et al., 2023).

Based on Wilcoxon Test results before and after guess picture and sound in a way direct with P-value 0.255 can concluded No There is significant difference between score pretest and posttest hallucinations in the group control although existence decline score hallucinations. Score results hallucinations in groups control varying and decreasing No too significant matter This caused by Because game considered No exciting by respondents. Attraction motivation and interest play a very important role important in effort participation respondents in activities. when something activity considered interesting and relevant, motivational increases and engagement follows, so participation respondents more tall (Nagy et al., 2022)

Hallucination Score of Experimental Group and Control Group Control. Researchers do comparison difference decline from group experiments and groups obtained Wilcoxon Test results group p-value = $0.001 < 0.05$, meaning there is significant difference between difference score hallucinations group experiments and groups control group experiment (Gatsu) experienced decline score significant hallucinations compared to with group control. This is show that interventions given to groups experiment more effective in lower hallucinations, while group control No show change significant. Gatsu android based mobile phone is very helpful distracting hallucinations and counteracting hallucinations at the time symptom currently hallucinations in patients schizophrenia. Games gatsu can increase function cognitive Where the most interesting thing patient capable guess almost 85% with correct answers at different game levels. game tasks utilize motivation intrinsic, cross-sensory neural compensation, and training format structured cognitive so that attention and processing Work temporary can focused on stimuli external (Vermeir et al., 2020). Can be concluded that somebody with schizophrenia Still able and remember voice the voices present during recycling his life. Technology moment This the more develop each individual Already No foreign with a cell phone even patient hallucinations with schizophrenia capable getting to know and playing with cell phones. Efforts made in form distraction need aligned with developments over time to make it easier and more practices. GATSU based on Android mobile phone is very effective in distract hallucinations but in implementation his need mentoring specially accompanied by personnel professional.

CONCLUSION

Score pretest hallucinations group experiment obtained range scores of 30 to 44 and a median value of 42 indicate majority respondents show score enough hallucinations high score posts hallucinations respondents after GATSU was carried out and obtained range scores of 5 to 20 and a median value of 7 indicate majority respondents show score enough hallucinations low. In the control group, the pretest results obtained a score range of 13 to 44 and a median value of 30 , indicating that the majority of respondents showed a fairly high hallucination score. In the control group, the posttest scores for respondents' hallucinations after manually guessing the picture and sound obtained a score range of 23 to 30 and a median value of 27, indicating that the majority of respondents showed a moderate hallucination score. The results of the Wilcoxon test before and

after Gatsu was administered with a P- Value of 0.001 can be concluded that Gatsu therapy has a statistically significant effect in reducing hallucination scores in patients in the experimental group, as evidenced by the difference between hallucination scores before and after Gatsu therapy, the median score dropped from 42 (moderate-severe) to 7 (mild). Based on table 7, the results of the Wilcoxon Test before and after guessing the pictures and sounds directly with a P- Value of 0.255, it can be concluded that there is no significant difference between the pretest and posttest hallucination scores in the control group even though there was a decrease in the hallucination scores. Based on table 9, the results of the Wilcoxon test for the experimental group and the control group obtained a p value = $0.001 < 0.05$, meaning that there is a significant difference between the hallucination scores of the experimental group and the control group.

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