

# The Effect of Interactive Television-Based Visual Arts and Expressive Arts Therapy on the Critical Thinking Skills of School Children that Survived Abduction

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**Abstract**

This study examined the effect of interactive television-based visual art therapy and expressive arts therapy on the critical thinking skills of school children that survived abduction. A quasi-experiment was conducted among 470 school children in two secondary schools. The participants were divided into a control group ( $N=235$ ) and experimental group ( $N=235$ ). The experiment group was further divided into the art therapy group and the expressive art therapy group. We found that art therapy and expressive art therapy were effective in improving the critical thinking skills of the children who experienced kidnapping in Nigeria.

**Keywords**

Art therapy, expressive art therapy, Nigeria, quasi-experiment, school children

**Introduction and background**

This study aimed at experimenting the effect of interactive TV-based art therapy and expressive art therapy in improving the critical thinking skills of school children who survived kidnapping in Nigeria. Nigeria ranks among the world's kidnapping hotspots and has recently witnessed many school children's abductions. A recent report by United Nations International Children's Emergency Fund (UNICEF) indicates that 3000 children were abducted in Nigeria between 2020 and 2022

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(Ezeh et al., 2023). Unlike other forms of kidnapping around the world, the Nigerian case is different as the kidnappers sometimes contact their parents for a ransom, and in some instances, the children are abducted for ritual purposes or illicit adoption (Anazor et al., 2023). And as these children are released from those who captured them, they must return to join their other mates (Ikechukwu-Ilomuanya et al., 2022). Thus, providing them with the necessary support to help them integrate is of the essence. Evidence has shown that developing critical thinking skills is a fundamental goal of all education (Alsaleh, 2020) and one crucial setting for children to develop their critical thinking abilities is the classroom. However, school children who have been abducted and released might report low critical thinking skills due to the traumatic situation they have experienced (Ugwulor-Onyinyechi et al., 2022). Exposure to trauma has been associated with cognitive functioning, suggesting that those who experience traumatic events show a decline in cognitive functioning (Lynch and Lachman, 2020; Obiechina, 2023). According to one recent study, the post-traumatic event is pronounced among abducted school children (Abdulah and Abdulla, 2020), affecting their thinking ability. Thus, these children require intervention to boost their critical thinking skills, which is much needed to continue their education (Gever et al., 2021).

Critical thinking is deliberate, self-regulatory thinking that combines abilities, information, and a willingness to take action (Kleemola et al., 2022). Instead of acting on impulses, critical thinking is scrutinizing the facts, considering alternative interpretations of that information and reaching a logically tenable conclusion (Lutzke et al., 2019). Thus, in this study, we propose using interactive television-based expressive art therapy and art therapy to improve the critical thinking skills of children who survived kidnapping in Nigeria. It should be noted that there is an established link between art therapy being a valuable tool for traumatized youth. For instance, Kim et al. (2022) stated that in cases where teenagers and young adults find their issues too painful or too complicated to talk about, art therapy sessions provide a safe outlet to uncover and express underlying thoughts and feelings. This is especially helpful for those too traumatized to speak about their experiences. Therefore, art therapy is a helpful strategy for helping youth who experienced trauma more generally (Gever et al., 2021).

Despite the fact mentioned earlier, no studies have examined the role of interactive television art-based therapies (expressive and art therapy) in improving the critical thinking of children that survived kidnapping, especially in Nigeria, that have experienced many kidnapping issues (Ezeh et al., 2023). A significant focus has been on using interactive television to promote the critical thinking skills of out-of-school children (i.e. children not opportune to attend formal education) in Nigeria (Gever et al., 2021). Thus, this study aimed at experimenting the effect of interactive TV-based art therapy and expressive art therapy in improving the critical thinking skills of school children who survived kidnapping in Nigeria. Specifically, we performed a quasi-experiment in two secondary schools in northern Nigeria to realize the effect of interactive TV-based art therapy and expressive art therapy in improving the critical thinking skills of school children who survived kidnapping in Nigeria. We found that traumatized youths can benefit from interactive TV-based art therapy and expressive art therapy as a successful intervention technique. In addition, interactive TV-based expressive art therapy is more successful than art therapy at boosting the critical thinking abilities of traumatized youth who have experienced kidnapping.

### *Enhancing critical thinking capabilities*

A growing number of studies that have examined ways to improve children's critical thinking looked at children currently enrolled in school, not those who have survived kidnapping and are waiting to be incorporated back into the school system again (Gever et al., 2021). Furthermore, there are rarely studies that focus on developing nations like Nigeria (Gever et al., 2021), nor have

there been studies to our knowledge that have experimented and compared the effect of visual and expressive art therapy in improving the critical thinking skills of children that survived a kidnapping. For instance, Maknun (2023) found that science education improves thinking skills and prepares students for future success because they are trained with learning that requires them to conduct experiments, discover and solve problems through small group discussions. Similarly, Doyan et al. (2022) determine the effectiveness of quantum physics learning tools using blended learning models to improve students' critical thinking and generic science skills. Results indicate that the use of quantum physics learning using a blended learning model is effective in improving children's critical thinking and generic science skills. In another related research, Hsu et al. (2022) designed Socratic Reflection Prompts via Video-Based Learning System (SRP-VBLS) and investigated its effects on elementary school fourth graders' critical thinking skills. The study found that one of the student's critical thinking core skills, the analysis skill, was significantly improved after exposure to the SRP-VBLS.

### *Art-based therapies and their usefulness on children*

The impact of art-based therapies (expressive and art therapy) on children has been established in the literature (Braitto et al., 2022; Morison et al., 2022; Regev, 2023), though not much has been done to show the relationship between art-based therapies and the critical thinking skills of children. In one study, the effectiveness of art therapy in improving the quality of life of cancer children was examined. The experiment comprised 60 children divided into a control and experimental group. The experimental group did some painting and handcrafting. Patients in the experimental group were noticeably more energetic and physically active, had lower levels of emotional distress, and had less anxious sensations (Abdulah and Abdulla, 2018). This is consistent with a study that found children's creativity enhanced through creative art therapy sessions (Moula, 2021).

The use of expressive art therapies to help Kolkata, India, children's residents heal from the trauma of commercial sexual exploitation has also been investigated in prior research (Singh and Kometiani, 2019). Mindfulness, openness and optimism all improve because of art therapy. Finally, a systematic literature review has shown that art therapy and creative art therapy have successfully treated children exposed to post-traumatic events (Morison et al., 2022). Indeed, there is some proof that children may benefit from art therapy or art psychotherapy (Braitto et al., 2022).

### *Interactive television-based intervention*

In this study, interactive television intervention implies using TV to provide instructions regarding art and expressive art therapy. In interactive television instruction, learners are engaged, unlike in conventional television broadcasting. Typical interactive television instruction engages the learners in various activities, and there are usually facilitators who assist with interpreting aspects of the package that may be too difficult to understand (Gever et al., 2021). Researchers have generally examined the impact of interactive TV interventions in recent years. Interactive radio and television may improve the life skills of non-schooling nomadic children, according to Nwokedi et al. (2022). The same authors found that interactive TV and radio improved children's life skills, while the TV was more effective (Nwokedi et al., 2022). Gever et al. (2021) performed a quasi-experiment to understand better how interactive television could foster the growth of critical thinking in youngsters not enrolled in school. The results demonstrated that TV intervention successfully boosted the children's ability for critical reasoning.

## *Theoretical underpinning and hypotheses development*

This study is based on the flow-informed theory of art therapy proposed by Kramer (1958) and the social cognitive theory propounded by Albert Bandura in 1989. The two theories were combined in this study based on the nature of the study, which looks at art therapy and creative therapy sessions actualized through interactive television intervention, with a facilitator on screen (TV) guiding interactively. The flow-informed theory of art therapy assumed that since creating art has healing properties, it tends to have therapeutic benefits. As a result, it is crucial to focus on creating art while using it to cure the mind (Chilton and Wilkinson, 2009). Based on the theory, it could be said that children exposed to traumatic events could benefit from art therapy sessions since creating art has been shown to have healing properties (Anazor et al., 2023). However, for these children to adequately create art, they require a facilitator (Anazor et al., 2023). Thus, the social cognitive theory, which assumes that people learn by observing others carry out specific actions, was used to support the flow-informed theory of art therapy. According to Bandura's (1989) thesis, learning happens when people try to copy the activities of others (Models) they witness. As shown in past research (Talabi et al., 2023), interactive TV instruction involves having a facilitator or presenter on screen guiding participants on how best to actualize a given therapy. Based on these theories, we assume that art therapy and expressive art therapy session instructions, actualized using a facilitator on screen (TV), also regarded as a model, which children imitate and listen to while carrying their artistic activities, could improve their critical thinking skills. Thus, we proposed that

*H1.* Interactive television-based art therapy and expressive art therapy will effectively increase the critical thinking skills of children who survived abduction in Nigeria.

*H2.* Interactive television-based expressive art therapy will be more effective than art therapy in increasing the critical thinking skills of children who survived abduction in Nigeria.

## **Methods**

### *Study design*

A quasi-experiment was used to evaluate the impact of interactive television-based visual arts and expressive arts therapy on the critical thinking skills of school children that survived abduction in Nigeria.

### *Study location/participants and selection technique*

We conducted our research in northern Nigeria where abduction has been reported often recently (Okocha et al., 2022; Ugwulor-Onyinyechi et al., 2022). The G\*power tool was used to calculate the sample size with the following parameters:  $(1-\beta)$  at 0.80, 0.30 effect size ( $f$ ),  $\alpha = 0.05$ , and 400 minimum sample size were required. However, 470 children met the inclusion criteria. The inclusion criteria for this study include being kidnapped for more than 3 months before the study and having stayed in captivity, showing signs of low critical thinking skills, and being willing to participate in the study. Children who had not experienced kidnapping and showed low signs of critical thinking were excluded. Thus, we recruited participants through school announcements that kidnapping had occurred, and 620 children volunteered to participate in the study. However, only 470 met the inclusion criteria. Our criteria align with the study of Ezech et al. (2023). Our sample was drawn from two randomly selected schools that have recently experienced kidnapping issues.

Grade and class were not considered when recruiting; participants could come from any class. We recruited children from different schools to avoid the issue of contamination. Those who passed the criteria were randomly assigned to either a control group ( $N=235$ ) or an experimental group ( $N=235$ ). The experimental group was split randomly into two groups ( $N=118$  expressive art therapy) and ( $N=117$  art therapy).

### *Intervention procedure*

In this investigation, there were two settings for the experiment. The first segment included TV-based art therapy, while the second featured TV-based expressive art therapy. The art therapy session consists of painting, drawing, and sculpture, while the expressive art therapy session includes dance therapy, art therapy, music therapy, poetry therapy, and writing therapy. The experiment occurred at two school premises (School A and B) of the kidnapped victims. The two schools have an art studio for teaching fine and applied arts. Each school's studio has large halls attached to them, which were used for the experiment. Group A in School A (expressive art therapy group,  $N=118$ ) received only intervention related to expressive art, and Group B in School B (art therapy group  $N=117$ ) received only art therapy intervention, and no group received both. Therefore, all participants in each group received the intervention simultaneously but not at the same venue. Each therapy session lasted for 1 hour, Monday to Friday, for 6 weeks. The children received some incentive for participating in the study; we gave each participant ₦ 500 for participating and provided them with meals after each intervention.

Below are the details of the two interventions:

*Interactive TV-based expressive art therapy.* Experts in music, sound, dance, art, writing, and poetry design the expressive art therapy intervention programme (Gever et al., 2023). To further ensure that the programme's material accurately reflects the study's objectives, it was reviewed by three experts (Gever et al., 2023). Below is the breakdown of the 6 weeks intervention:

*Week 1:* The first week was music therapy. Participants were exposed to the definition of songs, the essence of songs, and the relationship of songs to human emotions. They were also exposed to how songs can enhance cognition and improve skills. Educational songs that improved their thinking skills and creativity were played to them. They were also instructed or encouraged to sing songs that increased their understanding of specific topics that benefitted them. They heard and sang various rhymes and songs that taught fundamental ideas about numbers, the alphabet, time, and many other things.

*Week 2:* This week focused on dance therapy. Participants practised playfulness, sparked feelings, encouraged self-discovery, improved self-awareness, learned body checks, and re-established a sense of optimism and relaxation.

*Week 3:* This section focused on drama therapy. In this session, the children were exposed to the televised drama that improved their cognition and thinking skills. They were also instructed to mimic or perform short dramas to improve their speaking skills.

*Week 4:* This session looked at poetry therapy. The children engaged in poetry, which best helped them to understand their feelings. Through poetry, the children express their emotions. The children were exposed to poems that boosted their thinking skills and ability. They were also instructed to read some meaningful and relatable poems. Thus, the imagery and metaphors

used were able to increase their knowledge. We observed that the children who struggle with communication benefitted from the poetry.

*Week 5:* This week looked at writing therapy. The children were instructed to write about their feelings, experiences, and how best to overcome them. They watched how other children write on the TV screen, and some writeups were read out to improve their knowledge and understanding. Through writing, children were encouraged to promote their knowledge; thus, it promoted self-knowledge. The children could manage their emotions to a great extent through writing. Writing enabled them to make their thoughts more resilient to cope and grow from a bad experience, which is kidnapping. It helped them propel their personal growth, practice creative expression, and feel a sense of empowerment and control over their life. They wrote down their thoughts and emotions which allowed them to identify and understand them better. Putting their feelings into words helped them gain insight into what is causing them, and this helps them to work through them.

*Week 6:* An art therapy session was conducted in the final week. The children were instructed to draw, paint, and make sculptures reflecting their feelings. Furthermore, they were shown cheerful drawings on the TV screen that ignited their mood. They were exposed to colours and their meanings. The youngsters had to communicate their ideas and sentiments, sharpen their problem-solving abilities, lower their stress levels, integrate their emotions, boost their confidence, and have fun. In this same week, a summary of what has been done from week 1 was carried out, followed by an exhibition of music, dance, drama, poetry, and writing.

*Interactive TV art therapy intervention.* The art therapy programme was created by specialists in mass communication, psychology, architecture, and fine arts (Gever et al., 2023). Three specialists examined the programme's content to guarantee further that it appropriately represents the goals of the research (Ezeh et al., 2023). The therapy session is as follows:

*Week 1:* Participants watched an interactive TV art therapy session demonstrating how to use pencils, oil paints, and watercolours to depict various upbeat life perspectives and realistic painting styles.

*Week 2:* Participants were told to copy the shapes that the artists on the TV screen had drawn in their drawing books, including squares, triangles, and lines. The meaning of each colour was described. The therapists also gave participants instructions on how to depict peaceful, enticing, and non-violent aspects of nature in paintings and sketches.

*Week 3:* Participants were instructed to draw a picture that represented how they felt and then write a caption to go with it. Some of the artwork demonstrate how one may confront anxieties and fears and be resilient in life. Some complex artworks were projected on the screen, and they were instructed to find, examine and consider the numerous details that constitute the artwork. By routinely asking two questions: 'What do you think is going on in this work of art?' followed by 'what do you see that makes you say that?' the instructors encourage children to surface supporting details justifying their interpretations or claims. This process of observation and study helped teach the children to more closely observe and analyse the world around them skills that make up the bedrock of critical thinking. They further drew things that can improve critical thinking skills, for example, a story with pictures that were complex, which require deep understanding to unveil the meaning. They were free to discuss ideas, ask questions, and display their artwork to others in the intervention because this was an interactive session.

*Week 4:* This week, participants were taught how to draw real-life pictures that depict the strength of children, overcoming issues in life as well as beautiful nature. Canvas was used for the drawing in this week, suggesting that they moved from using a drawing book to a more advanced form.

*Week 5:* Participants were free to paint and sketch images on a canvas. They created several sculptures, paintings and images. They have the freedom to create happy drawings. They were also told to paint themselves and exchange such paints during this week in order to arouse their emotions. They drew challenging visuals to stretch their minds and sharpen their reasoning skills.

*Week 6:* There was a summary of everything completed thus far. Furthermore, in week 6, there were exhibitions. Participants presented their artwork and discussed its significance. The art therapists praised the pupils' efforts and urged them to do more.

### **Control group**

The control group did not get any intervention art-based therapies until after the study was over. However, the control group received routine care, routine checkup and their welfare was taken care of since they have passed through traumatic events. We checked them up at intervals to be sure their situations do not escalate. After the experiment was completed, the control group was exposed to the experiment to increase their critical thinking skills.

### **The instrument for data collection and measures**

This study took place between January and October 2022. Data were collected three times, before the experiment, after the experiment and 6 months after the experiment. Specifically, participants recruitment and first data collection took 1 month between January and February. The experiment took 6 weeks between February and April, and the second data collection was done at the end of May. The last data collection took place 6 months after May which is November 2022. In this study, we used a questionnaire to collect participant data. The critical thinking scale which has 10 items adapted from the study of Erawan (2010) was modified and used in this study. Erawan (2010) validated the scale and had an alpha of 0.72. Examples of the items include 'I consider information from various angles'. The scale was measured using a 5-point Likert-type scale ranging from 1 strongly disagree, and 5 strongly agree. To ascertain content validity, three experts, two from education and one from psychology were consulted to review the items and suggest where we needed adjustment. After due modification, we further conducted a pilot test on 30 respondents outside our study frame and realized an alpha of 0.76, suggesting that the instrument is suitable for a Nigerian sample. We further tested composite reliability (CR), Rho\_A, and average variance extracted (AVE) to ascertain the scale's psychometric properties. The results showed that all values were above the recommended threshold of 0.708 for the first two tests and above 0.50 for AVE, indicating that our scale is reliable and valid (Hair et al., 2017). It should be mentioned that the dissemination of the questionnaire happened three times: before the experiment, after the experiment, and 6 months after the experiment.

### **Data analysis**

Both descriptive and inferential statistics were utilized to analyse the data. The descriptive component of the study was completed using straightforward percentages, the mean, and the standard

**Table 1.** ANOVA result of the impact of the intervention on critical thinking at baseline (Time 1).

SN	Group	Mean score	SD	df	F	p-value
1	Control group	2.21	0.52			
2	Art therapy	2.32	0.44			
3	Expressive art therapy	2.43	0.53			
				2	1.02	0.32

**Table 2.** ANOVA result of the impact of the intervention on critical thinking skills at Time 2.

SN	Group	Mean score	SD	df	F	p-value	$\eta_p^2$
1	Control group	2.32	1.53				
2	Art therapy	3.82	1.32				
3	Expressive art therapy	4.51	1.42				
				2	241.01	0.03	0.46

deviation. The inferential statistical portion was accomplished using the Analysis of Variance (ANOVA) because there are three groups. The significance level for each hypothesis was set at 0.05.

### Ethical consideration

Ethical approval was obtained from the ethical review committee of the Taraba State University, Jalingo, Nigeria. The application for ethics approval was granted on the 6th of December 2021, with ethics number TSUJ/12/2021/115. All respondents were assured of confidentiality, and their parents were informed about the study; they signed a consent form before the study commenced. The study was independently sponsored; no grants or donations were made to it. This means that the study was self-sponsored by the authors. Given that study is aimed at helping to cope with trauma, the art therapists were available for all participants in cases in which they experienced distress during the study. Children were supported if they became distressed by allowing them time to rest. They were also assured that we were interested in helping them. Before the intervention, participants were told that the study was meant to improve their critical thinking, and they were assured it would not cause any harm to them. This was to prevent the participants being further traumatized, since they were released not more than 3 months before the study.

### Results

We retrieved the entire questionnaire from participants. The sample was made up of 56% female and 44% male. The sample's ages ranged from 16 to 18 years, with a mean age of 17. We attempt to determine the baseline critical thinking ability ratings for the control and experimental group in Table 1. Table 1 revealed the one-way ANOVA results on the critical thinking score of the school children who experienced abduction. The findings suggest no significant difference in the mean scores of the three groups regarding their critical thinking skills scores,  $F(2, 470) = 1.02, p = 0.32$ . This implies that before the therapies were administered, the school children who survived abduction had low scores on critical thinking, indicating that treatment was needed to increase their critical thinking.

Table 2 was computed to ascertain the impact of art-based therapy and expressive art therapy, compared to the control group, in improving the critical thinking skills scores of school children with abduction experiences. A post hoc comparison with the use of Tukey's HSD revealed a



**Table 3.** ANOVA result of the impact of the intervention on critical thinking skills after 6 months (Time 3).

SN	Group	Mean score	SD	df	F	p-value	$\eta_p^2$
1	Control group	2.11	1.51				
2	Art therapy	3.92	1.31				
3	Expressive art therapy	4.71	1.41				
				2	252.11	0.02	0.48

difference in mean scores for all three groups,  $F(2, 470) = 241.01, p = .03$ . School children in the therapy group (art and expressive therapy) reported an increasing score for critical thinking, unlike the control group, which did not change from Times 1 and 2. This outcome supports H1. Also, the results showed that expressive art therapy ( $M = 4.51, SD = 1.42$ ) intervention is more effective than art therapy ( $M = 3.82, SD = 1.52$ ) in increasing critical thinking skills. Therefore, H2 was supported.

Table 3 shows a significant difference between the three groups' critical thinking skills scores after a 6-month follow-up,  $F(2, 470) = 252.11, p = 0.02$ . The control group scores for critical thinking skills remained low after 6 months of follow-up ( $M = 2.11, SD = 1.51$ ). However, children in the art therapy and expressive art therapy groups still maintained high critical thinking skills.

## Discussion of findings

The result showed that before we carried out the experiment, participants in the control and experimental group scored low regarding their critical thinking ability; however, after the experiment, those in the experimental group, that is, art therapy and expressive art therapy, demonstrated better critical thinking skills. This implies that children exposed to art therapy and expressive art therapy have better chances of improving their critical thinking skills, especially after experiencing a traumatic incident like kidnapping. This supports studies examining the impact of art-based therapies (expressive and art therapy) on children (Braito et al., 2022; Morison et al., 2022; Regev, 2023). A follow-up assessment after 6 months also showed a significant increase in the critical thinking skills of the experimental group compared to the control group. This outcome extends studies examining the impact of art-based therapy (Braito et al., 2022; Laird and Mulvihill, 2022; Moula, 2021) without focusing on how it improves the critical thinking skills of children that have experienced abduction.

We discovered that children's critical thinking abilities were improved more by expressive art therapy than art form therapy, which was sustained even after 6 months of follow-up. A possible reason for this outcome could be that expressive art therapy combines many therapies, such as poetry, drama and dance, to improve the mental well-being of someone, compared to art therapy that only focuses on visual art therapy, such as painting, sculpting and drawing. The outcome of this research extends past studies that only focused on either expressive art therapy or art therapy (Braito et al., 2022; Morison et al., 2022; Moula, 2021) without establishing which is a more effective therapy.

## Conclusion

This study concludes that traumatized youths can benefit from interactive TV-based art therapy and expressive art therapy as a successful intervention technique. In addition, interactive TV-based expressive art therapy is more successful than art therapy at boosting the critical thinking abilities

of traumatized youth who have experienced kidnapping. This study's conclusion poses some theoretical and practical implications.

### *Theoretical and practical implications*

The study's finding that interactive TV-based expressive art therapy is superior to art therapy in sharpening critical thinking abilities contributes to the field. This result indicates that engaging in expressive art-based sessions with traumatized children fosters the development of critical thinking abilities. This extends beyond studies that only focused on expressive art therapy (Sesar et al., 2022) or art therapy in promoting well-being (Laird and Mulvihill, 2022). This study has also expanded on other research (Gever et al., 2021; Talabi et al., 2023) that examined interactive television's effectiveness on children. The flow-informed theory of art therapy is expanded upon in this study. It has been demonstrated that employing art-based therapies enhances critical thinking abilities. The finding has ramifications for the cognitive load hypothesis as well. As demonstrated in this study, participants were able to complete art-based therapies with the assistance of facilitators who engaged with them on television, and this improved critical thinking. For enhancing the critical thinking skills of abducted children from Nigeria, we propose employing expressive art therapy.

### *Limitations and suggestions for future research*

This study solely focused on school children in the Northern region of Nigeria. Nevertheless, more kidnappings have been carried out in this region. At any rate, we urge future research to go beyond this area and use more samples than the ones we have used. Furthermore, only two schools were used in this study. It is possible that some potential respondents were not captured in this study. Nevertheless, the results have shown the effectiveness of art-based therapies. Future research could include more schools.

This study can only conclude based on art therapy. Future research could carry out a comparative analysis of art and other therapies such as music, drama and cognitive behavioural therapy. Finally, this study did not include any covariates in its analysis. There was supposed to be more information about the sample if the group was largely homogeneous. Issues such as sex, urban/rural, economic status or other relevant factors must be accounted for to increase confidence in the results. Nevertheless, the study has been able to bring an exciting finding that supports the growing literature. Notwithstanding, we call on future researchers to remedy this flaw.

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### **Data availability statement**

The data used in this study is confidential.

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