

ESSAYS | PEER REVIEWED

## Hungarian Aphasia Choir Coping Online During the COVID-19 Pandemic

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### Abstract

Aphasia choirs have been gaining more and more attention for the last decade. The operation of these is based on two pillars: the therapeutic effect of singing with aphasia and decreasing the social isolation of clients with verbal language disorders. The aim of this article is to draw attention to the international community of these choirs, with special focus on the Hungarian Aphasia Choir, and show their challenges resulting from the restrictions imposed by the SARS-CoV-2 pandemic. The Hungarian Aphasia Choir has had their therapeutic rehearsals online for seven months. The participants' experiences and their coping methods regarding online and offline choir sessions were examined by an online survey of five questions completed by thirteen choir members living with aphasia as well as some of their caregivers. The responses clearly show the choir members' general desire to carry on offline rehearsals, while the results also demonstrate that online rehearsals are effective in decreasing social isolation.

**Keywords:** *aphasia choir, community music therapy, singing, online, pandemic*

### Introduction

In the case of aphasia, singing has complex rehabilitative value. The ability to sing is a retained resource in people with nonfluent aphasia (Schlaug et al., 2010; Tomaino, 2012; Zumbansen et al., 2017) but the ability to make music together, either by singing or playing instruments, usually remains intact in people suffering from any of the aphasia types (Yamaguchi et al., 2012). The therapeutic use of music gives a unique opportunity to work towards new means of communication. According to neurological findings, singing and speaking have an overlapping neural circuitry; moreover, singing itself involves greater neural circuitry than speaking (Leonardi et al., 2018). This can be one reason why “singing in synchrony (i.e., choral singing) helps improve the number of correct words produced by non-fluent aphasics” (Zumbansen et al., 2017, p. 2).

Singing in an aphasia choir is an active form of music therapy, which is based on a singing community. Singing together can have complex beneficial goals, equally supporting speech production (Schlaug, 2015; Sparks et al., 1974), social belonging (Ansdell, 2002; Tamplin et al., 2013; Tarrant et al., 2021) and improving the quality of life.

The number of studies examining the possible beneficial effects of aphasia choir participation on the quality of life and on communication outcomes is growing. Fogg and Talmage (2011), Tamplin et al. (2013) and Tarrant et al. (2021) all reported unfolding social connections through new friendships between choir participants and an increased sense of belonging after regular choir sessions consisting more than 50% of song singing (Monroe et al., 2020; Tarrant et al., 2016). Moreover, increasing confidence and improvement in the participants' mood during and in-between choir sessions as well as an increased sense of purpose, and that they liked "the fact that as an individual you are not categorized" (Fogg & Talmage, 2011, p. 267) were themes that also emerged from interviews with choir participants who live with aphasia, and their caregivers (Fogg & Talmage, 2011; Tamplin et al., 2013). Tarrant et al. (2016) adds that an increasing sense of belonging can result in social identity renegotiation, which is a social quality that has a beneficial effect on several health outcomes. Mantie-Kozłowski et al. (2018) suggests that in aphasia choirs "a context where participant enjoyment is viewed as fundamental to social value and hence, ongoing involvement in the activity" (2018, p. 17) should be given a more emphatic role compared to other therapeutic considerations.

Singing together itself can have an equalizing effect (Tamplin et al., 2013). Steele (2016) refers to Procter (2001) in her article explaining the participatory quality of the Community Music Therapy (CoMT) approach by saying that "hearing all that an individual offers as music allows him to focus more on what he may offer to the partnership, and less on diagnosis" (Steele, 2016, para. 1). A sense of purpose, increasing confidence and feeling competent as a result of increased participation as well as the possibility for identity renegotiation engendered by all this resonate with the principles of the CoMT (Ansdell, 2002; Steele, 2016; Stige & Aarø, 2011; Tiszai & Szűcs-Ittész, 2016) and the identity renegotiation theory in aphasia rehabilitation (Shadden, 2005); both can form the basis of therapeutic choir work.

## International HUB for Aphasia Choir Leaders

An international group of aphasia choir experts, called Aphasia Choirs Go Global (ACGG), was founded by Bronwen Jones (Australia) and Ellen Bernstein-Ellis (USA), two speech and language pathologists (Jones et al., 2013). In February 2021 the group had 103 members. The aphasia choir leaders belonging to ACGG meet online on a regular basis in order to exchange experiences and focus on practical as well as scientific issues (Jones et al., 2013). During the meetings organized in the period of lockdowns in most of the member states, participants of ACGG agreed that the context of aphasia with regard to social isolation was changed by the breakout of the SARS-CoV-2 pandemic. Living with aphasia in itself means social isolation (Pike et al., 2017; Shadden, 2005; Tarrant et al., 2021), which was exacerbated by the additional pandemic restrictions. Therefore, continuing the rehearsals with these singing groups became even more crucially important.

## The Hungarian Aphasia Choir During the SARS-CoV-2 Pandemic

The Hungarian Aphasia Choir (HAC) was founded in 2016 and bears the name "Hangadó Énekegyüttes," which literally means Sound-Giving Vocal Ensemble. The choir is led by two choir-leaders, who are the authors of this article and have been members of ACGG since February 2018. The core activity of the choir is song singing with additional vocal warm-up exercises, and giving performances (3–4 concerts a year). All the songs sung by the choir have live guitar accompaniment played by one of the choir-leaders.

In the last five years, the singers gave fourteen offline concerts in various locations in Hungary and participated in one online international choir meet-up as well as one online performance. The group also performed at scientific conferences and sang in hospitals for their fellow stroke survivors. Such moments were always crucially important for the singers as during these events they were able to experience that they were no longer patients but instead the ones who provided support to others. The main purpose of these occasions was, and continues to be, the sensitization of the audience and society as a whole to the problems and reality of people suffering from language and communication impairment.

Regretfully, the choir has not been able to give live concerts—all its concerts have been cancelled—since the SARS-CoV-2 pandemic outbreak in March 2020, nor has the choir been able to continue its offline rehearsals. In order to meet the socioecological goals of aphasia choirs, the group decided to continue the singing sessions on an online platform on a weekly basis. In Hungary the lockdown started in March 2020. From May until the end of the summer in 2020 the HAC could carry on with outdoor rehearsals in a public park of Budapest, during which the singers kept the required physical distance from each other. However, at that time not all the participants felt comfortable with travelling on public transport. Therefore, the option for online participation was also provided for those staying at home, creating a hybrid (online-offline) rehearsal method. One of the choir leaders was in charge of maintaining contact between those participating from home and those being there in person, and securing the appropriate visual and auditory environment through a laptop and mobile data in the park. In September and October, the Hungarian Aphasia Association provided a rented, spacious indoor space for the choir in order to be able to continue with the hybrid rehearsals in the autumn. However, due to the second wave of the SARS-CoV-2 pandemic, the choir had to return fully to the online platform in November 2020. This situation has remained unchanged until the present time (10<sup>th</sup> May, 2021).

The HAC has been rehearsing on an online platform for more than seven months now. Similar to the ACGG experiences, the HAC has also been facing various challenges: The experiences of the ACGG members show that none of the online interfaces used are able to eliminate the sound delay. Therefore, even if a group sings together, everybody, except the choir leader, has to mute themselves to avoid the chaotic sound. In this way the acoustics and the visual experience are not the same as during a live rehearsal.

By exploiting the benefits afforded by CoMT and aphasia choir work, the aim of HAC is to support successful identity renegotiation for people with aphasia, enabling participants to feel competent (Shadden, 2005) and equal participants in social activity and in society as a whole.

## The Experience of Online Aphasia Choir Participation

In this paper we aim to discover the experiences of aphasia choir participants in light of the pandemic. This research focuses on the situation of the HAC: what challenges they have to face when participating in an online choir rehearsal and what the possible benefits of virtual connectedness are. In order to better understand how the choir copes with online and offline rehearsals, the leaders distributed an online questionnaire of five questions among the singers.

## Research Method

An anonymous online survey was sent to all the 19 choir participants in October, 2020, during the hybrid rehearsal period, seven months after introducing online rehearsals. The age distribution of the choir members, the length of time the respondent has been living with aphasia, and the social conditions are described in Table 1.

The survey consisted of five questions as displayed in Table 2. The questionnaire was conducted in Hungarian, the participants' native language, and was translated from Hungarian into English by the second author.

**Table 1**  
Details about the choir

Number of singers (People living with aphasia)	19
Gender	9 male; 10 female
Age	Min: 40; Max: 82; Mean age: 60
Length of time the person has been living with aphasia	Min: 0.4 year; Max: 50 years; Mean: 6.48 years
Place of residence	13 members live close to the rehearsals; 6 members in the suburban region
Living with caregivers	16 members live with caregivers; 3 members live alone

**Table 2**  
The survey

	Question	Question Type
1.	How effective do you think our offline rehearsals are?	(answers on a scale of 1 to 5)*
2.	How effective do you think our online rehearsals are?	(answers on a scale of 1 to 5)*
3.	When there is no opportunity for offline/face-to-face choir rehearsals, are you willing to participate in online sessions?	(yes or no)
4.	What are the advantages of offline sessions?	(open-ended)
5.	What are the advantages of online therapies (choir sessions)?	(open-ended)

\* 1 "not at all," 2 "barely," 3 "moderately," 4 "effective," 5 "very effective"

**Table 3**  
Answers to the survey

Question	Number of respondents	Answers
1.	13	4.96 mean*
2.	13	2.83 mean*
3.	13	11 yes, 2 no
4.	11	Described in the text below
5.	12	Described in the text below

\*Mean value of the Likert scale answers (\*1 "not at all", 2 "barely", 3 "moderately", 4 "effective", 5 "very effective")

Due to the verbal impediments of the choir members, it was important not to rely solely on the questionnaire, since some singers with severe verbal understanding or reading difficulties were not able to provide answers. Therefore, the questionnaire survey was supplemented by an expert opinion on one of the participant’s nonverbal reactions to the first offline reunion of the choir after 3 months of lockdown and online rehearsals.

## Results

### Questionnaire

Thirteen choir participants filled out the questionnaire. However, there was a difference in the numbers of the answers for different questions, as displayed in Table 3.

The answers clearly show that in some cases the proxy answers of the caregiver were presented, which were also accepted, since for some choir participants it is difficult to answer these questions on their own.

In Question 1 and Question 2, the majority of the participants stated that the offline sessions were more effective than the online meetings. Rating the efficiency on a scale from 1 to 5, the members gave an average of 4.96 points for the offline and 2.83 points for the online rehearsals.

In Question 3 the choir participants expressed their preference for online rehearsals over no rehearsals at all, and only two participants said that they preferred not to participate in online sessions at all.

Answers for Question 4 were the following:

Regarding the benefits and advantages of the offline choir sessions, various answers were received. For example:

“The power of community.”

Most of the respondents emphasized psychological well-being as a fundamental human need:

“A person with aphasia needs personal contact; she/he returns home after a rehearsal always filled with joy.”

“Face-to-face meetups are the very best activities!”

Some even added that personal contact and socializing can be even more essential in the lives of those living with disabilities:

“Personal contact and meetups with fellow participants are crucial. They (...) help each other in singing, (...) it all improves their mood and psychological well-being (...) and helps their recovery, which is the most important thing.”

Only one person mentioned the issue of technical difficulties, albeit only indirectly:

“Personal contact, you don’t have to bother with the computer.”

In connection with Question 5, it should be pointed out that in three answers the respondents expressed their disappointment in regard to meeting online, which they felt was incomparable with a personal meeting:

“ ... This [the offline rehearsal] can be called an activity, but the online version cannot.”

“There is no advantage of online rehearsals (...) it is like talking to a computer, it is incomparable with the face-to-face choir (...). The Covid-19 pandemic is a nightmare for a person living with aphasia (...).”

“In my opinion, there is no advantage (...).”

However, based on the answers about the advantages of the online choir sessions, it can be stated that most of the singers welcomed the opportunity to be able to participate in the choir at all:

“If there is no other way, than it is ok as well.”

“It is still nice to see each other.”

One of the members emphasized that online sessions enabled him to join the choir without the worry of physical accessibility:

“My husband has difficulty in walking and moving (...), he is also able to participate in the choir like this (...).”

Two participants reported that during the pandemic they even prefer to stay home and stay safe:

“It is more comfortable and safer.”

“You don’t need to travel, (...) You can avoid the risks of this current pandemic.”

In practice, the group faced some information communications technology problems, such as handling the video conference platform including exiting or entering the meeting, and muting themselves. Surprisingly, these were less cited as a problem in the questionnaire answers than expected. All the remarks and our observations showed that the singers primarily approach the singing group and the challenges of the unexpected transferring to the online functioning from a social perspective.

Despite all the challenges of the online rehearsals, most of the members showed a willingness to compromise with the online interface. Another advantage of the online interface crystallized too: For those challenged by longer travel distances and mobility impairments, the online meeting platforms provided a reasonable alternative to join the rehearsals.

## Observations

### Individual

Besides the thirteen respondents to the survey, we dealt with one choir member with severe chronic aphasia—one who could not answer the questionnaire herself—on an individual basis. The 47-year-old female singer found it extremely challenging to handle the online interfaces during our first online rehearsal period (March–May 2020). She was able to spontaneously communicate with a vocabulary of ca. ten words, while she could fluently sing the familiar lyrics with a good sense of rhythm and intonation. In May 2020, it was possible to restart the personal offline rehearsals in the open air, with the rule of social distancing observed. This particular member could hardly participate in the online sessions as she struggled with a lot of technical problems, but she came to the first open-air, live meeting with great enthusiasm and became really emotional, showing how much she was missing this moment. She immediately approached one of the choir leaders with a big hug and tears in her eyes and did not let her go for a while. She then tried to express her feelings with words in which she did not succeed, but she made it perfectly clear through nonverbal gestures and intonation what great frustration she experienced when she was not able to join in the online rehearsals.

### Group

The attendance of the choir was monitored by the choir leaders, i.e., their participation in the online meetings, on a regular basis. It can be seen that the average attendance did not change during the sessions: Only two out of the nineteen members refused to participate in the rehearsals organized only online.

The shift to the online world and the regular ACGG meetings helped the HAC to co-organize an aphasia choir meet-up with an aphasia choir from New Jersey, led by Gillian Velmer, speech and language pathologist. More than thirty singers (people with aphasia, caregivers and choir leaders) took part in this online event, during which the participants with aphasia also had to cope with the Hungarian-English linguistic challenge. The choir members exchanged experiences with the help of translators (the choir leaders and a volunteer caregiver). It was impressive to see how linguistic borders disappeared and in the middle of the pandemic, people felt that they had bonded with each other without boundaries.

Even though the choir is not able to give concerts and take part in live social events at the moment, the members are gradually mastering the skills required for using the online tools, thus the efficiency of the weekly choir rehearsals has been gradually improving. The members also seem to gradually realise that struggling with aphasia and dealing with social distancing are much the same all over the world. Even people with aphasia living 6,000 km away have the same challenges; they can give support and help their fellow survivors struggling with the same disability. The singers’ proactivi-



ty has in fact been growing after several months of online rehearsals. They introduce their home environment to each other, and they show their own drawings or artwork about songs the group usually sings. All in all, these innovations and breaking out of routines offer the chance for more diverse choral meetings.

## Discussion

The questionnaire, the observations and the reviewed literature have a lot of correlating elements. Similarly to the findings of Fogg & Talmage (2011), the members of the HAC also mentioned the improvement of mood resulting from new social connections established in the choir, despite the challenges of being restricted to online meetings. The answers of the HAC members about the improvement of psychosocial well-being resonate with the reports of Tamplin et al. (2013) in that aphasia choirs have a beneficial effect on peer support and a general equalizing effect among group members. HAC members found the recreational and mood-lifting effect of the rehearsals as important as Mantie-Kozlowski (2018) accentuates in her study. In Steele's (2016) review, the importance of "partnership and less focus on diagnosis" was reflected in some answers to the open-ended questions in the HAC questionnaire.

Regarding the advantages of online rehearsals (Question 5), the answers of the participants are diverse. Online presence divides the group in terms of their preferences. For some participants virtual attendance might be more accessible, while other participants ranked mood and motivation lower because of their disappointment with the lack of face-to-face interaction. The choir leaders, therefore, face new challenges in the long term: they have to adapt to the different needs of the group members.

## Limitations

The research was limited by the relatively small number of participants and the time constraint in regard to drawing up the questionnaire resulting from the unpredictable pandemic restrictions. For this reason, the questionnaire could not be tested before distribution.

## Conclusion

The objective of this article is to underscore the supportive functions aphasia choirs have in the participants' everyday life and emphasize the significantly increased mental burden they have to manage due to the restrictions during the SARS-CoV-2 pandemic.

It is clear that nearly all of the aphasia choir members would like to reunite face-to-face as soon as possible. Taking the conclusions of this period into account as well as the surprising advantages of online rehearsals necessitated by the SARS-CoV-2 pandemic restrictions, the 'post-Covid 19' era will probably differ from the 'pre-Covid 19' era in the following perspective: It can be assumed that those aphasia choirs that survive this pandemic period by reverting to online methods will presumably remain more open to online or hybrid meetings in the future.

Based on all our findings and our experiences, more research is required in this field. The following topics can provide a basis for future research: aphasia choirs' coping methods with the online opportunities globally, changes in the numbers of members during the long-term functioning of the choir and during the SARS-CoV-2 pandemic era, the participants' challenges since the introduction of online rehearsals, and long-term solutions—online, offline or hybrid. This study is hoped to stimulate more comprehensive research on the topic.

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## About the Authors

Zsófia Fekete is a registered music therapist and a member of the Hungarian Music Therapy Association. Zsófia has more than twenty years of clinical experience at the National Institute of Medical Rehabilitation (Hungary). She obtained her PhD degree at the University of Pécs in 2021. She mainly works with patients with serious brain injury, coma and aphasia. She is the founder of the first Hungarian Aphasia Choir (Hangadó Énekegyüttes) with Fanni Eckhardt, where people struggling with severe aphasia can experience the benefits of community singing therapy. She is also the founder of the vocal ensemble Staccato (1996), where she tries to adopt inclusivity, helping people to join the choir after acute rehabilitation. Zsófia has helped and given inspiration to numerous students taking part in Hungarian music therapy trainings. She regularly holds lectures on music therapy in the neurorehabilitation at rehabilitation medicine trainings for graduate doctors.

Fanni Eckhardt is a current Master of Music Therapy student at ArtEZ University, The Netherlands. Her master research topic is self-concept improvement for people with aphasia through therapeutic songwriting or other music therapy interventions. She has been working in aphasia rehabilitation since 2014 as a music teacher and as a music therapy trainee at the National Institute of Medical Rehabilitation (Hungary) and at the Hungarian Aphasia Association. She is a board member of the Association Internationale Aphasie (AIA), and the co-leader of the first Hungarian Aphasia Choir (Hangadó Énekegyüttes), founded in 2016 by Zsófia Fekete. She holds a bachelor and a master's degree in music education from the Franz Liszt Academy of Music (Hungary) and is an online communication advocate for people with aphasia.

## References

- Ansdell, G. (2002). Community music therapy and the winds of change. *Voices: A World Forum for Music Therapy*, 2(2 SE-Essays). <https://doi.org/10.15845/voices.v2i2.83>
- Fogg, L., & Talmage, A. (2011). The CeleBRation Choir: Establishing community group choral singing for people living with neurological conditions. *Psychomusicology: Music, Mind and Brain*, 21(1–2), 264–267. <https://doi.org/10.1037/h0094030>
- Jones, B., Bernstein-Ellis, E., Mahendra, N., & Rose, M. (2013). Aphasia Choirs go global: An international survey comparing structure, goals and outcome measures. Poster. *ASHA Annual Convention*. <http://works.bepress.com/nidhi-mahendra/97/>
- Leonardi, S., Cacciola, A., De Luca, R., Aragona, B., Andronaco, V., Milardi, D., Bramanti, P., & Calabrò, R. S. (2018). The role of music therapy in rehabilitation: Improving aphasia and beyond. *International Journal of Neuroscience*, 128(1), 90–99. <https://doi.org/10.1080/00207454.2017.1353981>
- Mantie-Kozłowski, A., Mantie, R., & Keller, C. H. (2018). Enjoyment in a recreational sing-along group for people with aphasia and their caregivers. *Aphasiology*, 32(5), 518–537. <https://doi.org/10.1080/02687038.2018.1427208>
- Monroe, P., Halaki, M., Kumfor, F., & Ballard, K. J. (2020). The effects of choral singing on communication impairments in acquired brain injury: A systematic review. *International Journal of Language and Communication Disorders*, 55(3), 303–319. <https://doi.org/10.1111/1460-6984.12527>
- Pike, C., Kritzinger, A., & Pillay, B. (2017). Social participation in working-age adults with aphasia: An updated systematic review. *Topics in Stroke Rehabilitation*, 24(8), 627–639. <https://doi.org/10.1080/10749357.2017.1366012>
- Procter, S. (2001). Empowering and Enabling. *Voices: A World Forum for Music Therapy*, 1(2 SE-Essays). <https://doi.org/10.15845/voices.v1i2.58>
- Schlaug, G. (2015). Melodic Intonation Therapy. In G. Hickok, S. L. Small (Ed.), *Neurobiology of Language* (pp. 1015–1023). Elsevier Inc. <https://doi.org/10.1016/B978-0-12-407794-2.00081-X>



- Schlaug, G., Norton, A., Marchina, S., Lauryn, Z., & Wan, C. Y. (2010). From singing to speaking: Facilitating recovery from nonfluent aphasia. *Future Neurology*, 5(5), 657–665. <https://doi.org/10.2217/fnl.10.44>
- Shadden, B. B. (2005). Aphasia as identity theft: Theory and practice. *Aphasiology*, 19(3–5), 211–223. <https://doi.org/10.1080/02687930444000697>
- Sparks, R., Helm, N., & Albert, M. (1974). Aphasia rehabilitation resulting from melodic intonation therapy. *Cortex*, 10(4), 303–316. [https://doi.org/10.1016/S0010-9452\(74\)80024-9](https://doi.org/10.1016/S0010-9452(74)80024-9)
- Steele, M. (2016). How can music build community? Insight from theories and practice of community music therapy. *Voices: A World Forum for Music Therapy*, 16(2 SE-Position Papers). <https://doi.org/10.15845/voices.v16i2.876>
- Stige, B., & Aarø, L. E. (2011). *Invitation to Community Music Therapy*. Routledge. <https://doi.org/10.4324/9780203803547>
- Tamplin, J., Baker, F. A., Jones, B., Way, A., & Lee, S. (2013). “Stroke a chord”: The effect of singing in a community choir on mood and social engagement for people living with aphasia following a stroke. *NeuroRehabilitation*, 32(4), 929–941. <https://doi.org/10.3233/NRE-130916>
- Tarrant, M., Carter, M., Dean, S. G., Taylor, R., Warren, F. C., Spencer, A., Adamson, J., Landa, P., Code, C., Backhouse, A., Lamont, R. A., & Calitri, R. (2021). Singing for people with aphasia (SPA): Results of a pilot feasibility randomised controlled trial of a group singing intervention investigating acceptability and feasibility. *BMJ Open*, 11(1), 1–12. <https://doi.org/10.1136/bmjopen-2020-040544>
- Tarrant, M., Warmoth, K., Code, C., Dean, S., Goodwin, V. A., Stein, K., & Sugavanam, T. (2016). Creating psychological connections between intervention recipients: Development and focus group evaluation of a group singing session for people with aphasia. *BMJ Open*, 6(2), 1–9. <https://doi.org/10.1136/bmjopen-2015-009652>
- Tiszai, L., & Szűcs-Ittzész, Z. (2016). Community music therapy projects between musicians living with severe disabilities and adolescent music students. *Nordic Journal of Music Therapy*, 25(sup1), 152–153. <https://doi.org/10.1080/08098131.2016.1180203>
- Tomaino, C. M. (2012). Effective music therapy techniques in the treatment of nonfluent aphasia. *Annals of the New York Academy of Sciences*, 1252, 312–317. <https://doi.org/10.1111/j.1749-6632.2012.06451.x>
- Yamaguchi, S., Akanuma, K., Hatayama, Y., Otera, M., & Meguro, K. (2012). Singing therapy can be effective for a patient with severe nonfluent aphasia. *International Journal of Rehabilitation Research*, 35(1), 78–81. <https://doi.org/10.1097/MRR.0b013e32835032f8>
- Zumbansen, A., Peretz, I., Anglade, C., Bilodeau, J., Gagnéux, S., Hubert, M., & Hébert, S. (2017). Effect of choir activity in the rehabilitation of aphasia: A blind, randomised, controlled pilot study. *Aphasiology*, 31(8), 879–900. <https://doi.org/10.1080/02687038.2016.1227424>