

Improving Happiness of The Elderly through Virtual Reminiscence Intervention

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Abstract. Happiness is an important variable in improving the physical and psychological well-being of the elderly. An effective intervention to enhance the variable is reminiscence. Therefore, this research aimed to evaluate the impact of virtual reminiscence intervention on the happiness of the elderly. The method used was quasi-experimental with a pre-test and post-test design as well as a non-equivalent control group. The sample consisted of 7 and 8 participants in experimental and control groups, aged 60-74 years. In addition, purposive sampling method was used to select participants from 3 nursing homes in Yogyakarta. Data was also collected using Oxford Happiness Questionnaire (OHQ), Happy Emotion Thermometer Scale, interviews, and observations. The results showed a significant difference between control and experimental groups on OHQ and Happy Emotion Thermometer scales. According to qualitative evaluation, the intervention generated positive feelings and reduced negative emotions. In this context, virtual reminiscence intervention sessions played a role in increasing the happiness of the elderly.

Keywords: Reminiscence intervention, happiness, elderly, virtual reminiscence

DOI:

<https://doi.org/10.15575/psy.v11i1.28429>

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Psymphatic :

Jurnal Ilmiah Psikologi

Vol.11:1, June 2024,

Page 69-78

eISSN: 2502-2903

pISSN: 2356-3591

Article Info

Received:

July 24, 2023

Accepted:

June 6, 2024

Published:

June 29, 2024

Introduction

The number of elderly is increasing on an annual basis as reported by statistical data. In Indonesia, the percentage of this group reached 10.48% in 2022 (BPS, 2022). The development shows that the nation is facing an old structure, with the number exceeding 10% of the total population. In 2022, 8 provinces had elderly population structure, namely Yogyakarta, East Java, Central Java, North Sulawesi, Bali, South Sulawesi, Lampung, and West Sumatra. Yogyakarta ranked first with a percentage of 15.52% and 16.64% in 2021 and 2022, respectively (BPS, 2022). In this context, the increase is directly proportional to life expectancy and the decrease in mortality rates (BPS, 2022). Therefore, the elderly should receive more attention for physical and psychological well-being.

In the stages of development, the elderly experienced many changes as well as biological, psychological and social decline (Suardiman, 2016). The changes and decline potentially cause economic, socio-cultural, health, and psychological problems (Suardirman, 2016). Negative schemas on the decline also contribute to psychological problems such as depression. Recently, more than one-third of the

population is depressed (Cai et al., 2022) and some of the elderly in nursing homes are mentally affected. These problems include depression, anxiety, and dementia (Pratama et al., 2023), impacting health and well-being (Reynolds et al., 2020).

An important practical method for improving well-being is positive psychology. This method provides solution to problems and improves quality of life (Delposen, 2020). According to Seligman and Csikszentmihalyi (2000), positive psychology subjectively includes aspects such as well-being, satisfaction, happiness, hope and optimism, as well as happiness.

An important variable in positive psychology, impacting physical and psychological health is happiness (Luchesi et al., 2018; Seligman & Csikszentmihalyi, 2000). An "unhappy" individual significantly impacts life satisfaction, depression, social phobia, and length of life (Luchesi et al., 2018). Research related to the elderly defines a happy person as someone who experiences more positive emotions such as pleasure, interest, and pride (Smith & Smith, 2015).

According to subjective well-being theory, happiness is characterized by many positive and few negative feelings (Diener, 2000). This variable can be impacted by cognitive and affective evaluations, which are related to life satisfaction and the number of positive and negative affections, respectively. In addition, positive self-esteem, perception, and mindset are important aspects of happiness. Therefore, the elderly need to improve these aspects to achieve optimal happiness.

Steptoe et al. (2019) identified four specific reasons making the analysis of happiness an important theme in gerontology. First, the variable is characterized by the absence of depression, anxiety or distress and possesses several benefits. Second, happiness is important in reducing the risk of disease and death but related research is limited. In some analyses, the variable predicted life expectancy in the elderly. Third, the impact of happiness is very broad, affecting various aspects such as social and personal relationships, economic well-being, health risks, behaviour, and time management. Fourth, development and modification can be conducted to improve health and well-being. In this context, happiness is an important variable to develop, especially in the elderly.

The intervention is carried out through art (Stuckey & Nobel, 2010), Cognitive Behavior Therapy (CBT) (Mikaeil et al., 2018), and reminiscence therapy (Westerhof & Bohlmeijer, 2014) but some require special expertise in the implementation. Reminiscence therapy is used in Positive Psychology Intervention (PPI) (Hulscher, 2020; Meléndez et al., 2015; Pinquart & Forstmeier, 2012; Lodha & Sousa, 2019).

The word reminiscence is from a Latin word, *reminiscentia* which means "the act of remembering". Therefore, reminiscence refers to "the memory of the past" (Harper, 2019). The intervention was pioneered by Butler (1963) with the term "life review" to recall past events. This non-pharmacological therapy positively impacts the elderly by improving quality of life, cognitive function, and feelings (Woods et al., 2018). The concept is also reinforced by several research showing that reminiscing about past experiences increases happiness (Hulscher, 2020; Tam et al., 2015; Yousefi et al., 2015) and reviews life events (Ildarabadi, et al., 2020; Butler, 1963).

Reminiscence intervention is also in line with Erik Erikson's psychosocial development theory. The elderly are at the developmental stage of ego integrity versus despair, which is a critical stage in late adult life (Feist et al., 2018). This group needs to develop good ego integrity, by viewing lives positively to achieve happiness (Diener, 2000). In this context, the intervention can the individuals to reflect on life experiences and the past, as well as provide a new

mental structure to expand understanding of the meaning of life (Butler, 1963).

Tools such as old photos, toys, music, pictures, and videos are used to stimulate memories in reminiscence intervention (Bulecheck in Tam et al., 2021). This therapy is easily implemented and has minimal side effects (Shin et al., 2023) on the elderly in nursing homes (Shin et al., 2023).

Some research showed that reminiscing about past experiences could increase happiness (Yousefi et al., 2015; Hulscher, 2020; Tam et al., 2015; Lodha & Sousa, 2019). According to Tam et al. (2015), reminiscence intervention effectively improved the psychological well-being of the elderly with intact cognitive abilities (Lodha & Sousa, 2019). This method can also be recommended for individuals at the community level.

In Indonesia, reminiscence intervention can reduce depression (Syarniah, 2010), stress (Kartika & Mardalinda, 2017), anxiety (Karra, 2015), and loneliness (Yoepiana et al., 2020; Feeber, 2008). In addition, the intervention is important in increasing successful aging (Susanto et al., 2020). Firdaus et al. (2019) also analyzed happiness in terms of well-being and conducted a single-case experiment on the elderly. The research used Oxford Happiness Questionnaire (OHQ) and interviews to conduct data analysis. The results showed increased happiness in the elderly before and after conducting reminiscence intervention for five sessions.

Reminiscence intervention can also be performed remotely, which supports the need for remote intervention due to limitations in face-to-face methods, especially during the COVID-19 pandemic. Previous research conducted by Chapoulie et al. (2014) showed no difference in the success of the face-to-face or virtual reminiscence intervention. Moreover, implementing virtual intervention provides different advantages including being more flexible, the ability to express participants' thoughts and emotions, and minimizing costs (Wasterhof et al., 2019).

Several analyses have been developed to determine the effectiveness of technology-based intervention in the elderly (Tam et al., 2021; Westerhof et al., 2019). In Indonesia, research on technology adoption in this field is still very limited. Susanto et al. (2020) adopted technology as a medium for providing the materials needed in the sessions. Therefore, the implementation of the therapy is carried out face-to-face and not virtually. Further analysis to determine the impact of reminiscence intervention carried out virtually is challenging. The alternative of implementing virtual intervention is also supported by the massive use of technology among the elderly (BPS, 2022). Therefore, the era of digitalization penetrating the lives of the elderly can be put to good use.

This research aims to update the application of reminiscence intervention conducted virtually to increase happiness in the elderly. The technology-based intervention is used as a supporting and primary medium in the sessions. Previous results may have analyzed various aspects of psychological or cognitive well-being. However, this research assesses the impact of virtual intervention on improving the happiness of the elderly. A great potential is shown for expanding access to mental health services and improving well-being through more practical and accessible means. Therefore, this research aims to determine the effects of virtually conducted reminiscence intervention on the happiness of the elderly.

Methods

Design

This research is a type of quasi-experimental analysis with a non-equivalent control group design. The experimental group was given treatment or intervention, while the control group did not receive any treatment. Subsequently, a comparison was carried out between the groups (Creswell, 2014) and the data collection methods used were questionnaires, interviews and observations.

Participants

The participants consisted of 15 elderly selected using a purposive sampling technique based on specific predetermined criteria appropriate to the objectives (Sugiyono, 2019). The criteria included (1) The elderly with an age range of 60 to 74 years, (2) The elderly who have a 3MS value with a normal or mild category above 70, (3) Married, (4) Not experiencing serious or chronic illness characterized by an Activities of Daily Living (ADL) value, (5) No income, (6) Minimum high school education, and (7) Still able to hear and see well. The participants who met the criteria were 7 and 8 in the experimental and control groups, respectively.

Procedure

The experimental group received treatment in four meetings of intervention sessions conducted on four consecutive days for 30-45 minutes each. In each session, participants were asked to reminisce about a predetermined theme. In the first session, the theme included remembering old songs from 1940-1970 that held special meaning or were favored. The theme of the second session was remembering the most memorable places. In the third session, personal stories were remembered, such as love stories by remembering the first date, partner, and married life. For the fourth session, participants were invited to remember important achievements.

Virtual intervention was conducted and several factors were considered in the preparation process. First, the availability of the supporting devices used

was ensured. Second, a room conducive to conducting the intervention should be prepared. Ensuring an internet network connection guarantees that the intervention process can proceed without interruption. Team-viewer software was recommended to review devices remotely. The audio and video were also checked to ensure proper visibility and audibility.

The experimental group was measured by giving a pre-test and post-test using OHQ measuring instrument before and after conducting a series of sessions for 4 days. Subsequently, the Happy Emotion Thermometer Scale instrument was used to measure before and after attending each session. Interviews were conducted with the experimental group to explore the impact of the intervention qualitatively.

The control group was only given a pre-test, post-test, and follow-up questionnaire. In this context, the post-test was given 4 days after the pre-test. At the final stage, the participants were measured using OHQ instrument and the Happy Emotion Thermometer Scale as a follow-up.

Observation was also conducted in the experimental group to determine response during the sessions. The guide contained the characteristics of the behavior to be observed. In addition, interviews were conducted as complementary data in the intervention process. A guide was made to explore the experience in depth with participants during the sessions. Different questions related to aspects of happiness were also developed based on the objectives. This research received ethical clearance on Tuesday, November 22, 2022, from the UAJY Ethical Development Center with letter number 0009V/III/PPPE.PM.10.05/10/2022.

Instrument

OHQ instrument was developed by Hills and Argyle (2002) to examine personal happiness. The instrument is a uni-dimensional construct of well-being and some examples of items are "Life is fun", "I feel happy and joy", and "I am not optimistic about my future". The options use a 6-point Likert scale, with responses ranging from 1 (strongly disagree) to 6 (strongly agree). OHQ instrument was adapted by Rahmawati et al. (2016). Since the participants in the adaptation were not aged 60 to 74, the readjustments and tryouts regarding the test tool were made to determine the validity and reliability. The results of the validity test showed that 25 statement items had an r coefficient value of more than the table (.2632) and were declared valid. Meanwhile, 3 statement items had an r coefficient value less than the table (.2632) and were declared invalid. The statement items were revised and consulted with experts. The reliability test reported an r value of .856, hence the instrument was reliable.

The Happy Emotion Thermometer Scale is a subjective measurement tool designed to identify and

monitor the level of happiness. The question "How happy are you right now?" was a form of subjective questioning used in the analysis (Diener et al., 1999). According to hedonic adaptation theory, an individual tends to return to a relatively stable level of happiness after experiencing several events. Therefore, subjective questions can be used to measure differences in happiness between individuals over different periods. These questions provide an overview of happiness and do not show details about more complex emotional experiences (Diener et al., 2010). The answers provided range from 1 (very unhappy) to 7 (very happy) as an additional scale to determine changes in the level of happiness before and after performing each intervention session.

Analysis Technique

Descriptive statistics were conducted for the independent variables. The Paired Samples Test was used to determine differences in data of the experimental group. Meanwhile, the Independent Samples Test showed the differences in data between groups. This research also adopted observation and interviews to complement existing data.

Results and Discussion

Results

The following is the demographic data of participants in each group:

Table 1
Demographic Data of Participants

Description		Experimental group	Control group
Number of participants		7	8
Gender	Female	5	4
	Male	2	4
Age	60-64	2	1
	65-70	4	8
	71-74	0	0
Nursing home	BPTSW Abiyoso	4	4
	BPTSW Budi Luhur	1	4
	PTSW Budi	2	0
	Dharma		

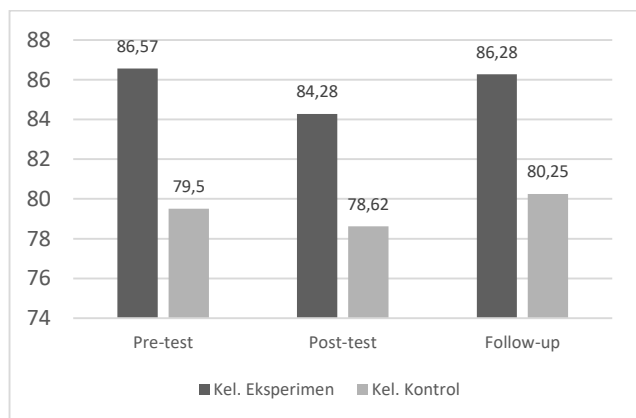


Figure 1. Overview of Mean OHQ in Experimental Group and Control Group

Table 2
Differential Test Results of OHQ Measures between Experimental and Control Groups

Measurement time	t	p-value
Post-test	1.869	.084 ^a
Follow-up	1.581	.138

^a Marginally significant (p-value <.1)

Table 3
Results of OHQ Measure Tool Differential Test in the Experimental Group

Measuring time	Experimental group (N=8)		
	Mean ± SD	t	p-value
Pre-test	86.57 ± 9.28	1.429	.203
Post-test	84.28 ± 6.75	1.429	.203
Pre-test	86.57 ± 9.28	.236	.821
Follow-up	86.28 ± 8.69	.236	.821
Post-test	84.28 ± 6.75	-1.797	.122
Follow-up	86.28 ± 8.693	-1.797	.122

Table 4
Results of the Happy Emotion Thermometer Scale Discrepancy Test

Measurement time	t	p-value
Post-test of both groups	-2.388	.017*
Follow-up of both groups	-2.037	.042*

^a Marginally significant (p-value <0.1)

*p-value < .05 indicated a significant difference

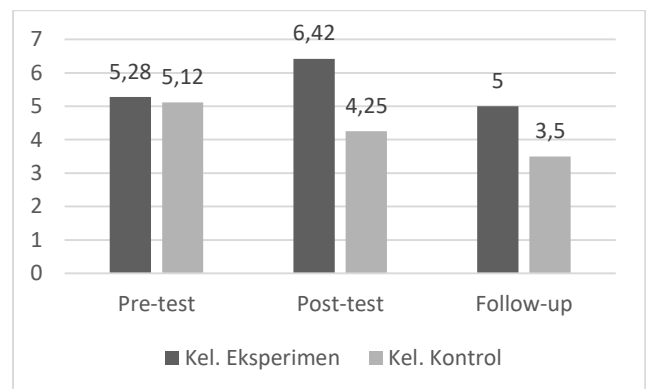


Figure 2. Comparative Overview of the Mean of the Participants' Happy Emotion Thermometer Scale in the Groups

The quantitative tests showed that the average level of happiness in the post-test was decreased for both groups. However, the level was increased in the follow-up data.

An Independent Sample Test was conducted to determine the difference in the post-test of the groups (table 2). The data used were normally distributed and homogeneous with a p-value of .084 smaller than the threshold (p-value .1). The result indicated a marginally significant difference between the groups. Even though the strength was limited, a potentially significant difference was shown in post-test scores. In

addition, the difference test conducted at follow-up reported no significant difference (table 2).

The Paired Sample Test showed normally distributed and homogeneous data in the experimental group. The result showed no significant difference between the pre-test and post-test (table 3).

Based on the Happy Emotion Thermometer Scale, the average level of happiness increased before and after participating in the virtual reminiscence intervention (figure 2).

Other tests were also conducted using the Happy Emotion Thermometer Scale. The results showed a significant difference (p-value <.05) in the post-test scores of the control and the experimental groups. Therefore, reminiscence intervention affects the level of happiness in the experimental group. The results of the difference test on the follow-up value showed a significant difference (p-value <.05).

Interviews were conducted to explore the evaluation of participants after attending virtual reminiscence intervention and qualitative evaluation showed a positive response. Positive feelings of happiness, pleasure, relaxation, pride, enthusiasm, and satisfaction were expressed after the intervention session. For example, a participant stated that:

Perasaan saya sebelumnya kayaknya ya biasa aja ya tapi sesudah sesi ini selesai saya ada apa ya sekelumit gembira ya karena saya bisa mengingat kembali apa-apa yang telah saya alami.

My feelings before were normal but after the session was over I felt like I had a sense of excitement, this was because I could recall what I had experienced.

The intervention sessions allowed self-evaluation, contributing to increased happiness. For example, a participant stated that:

Untuk untuk 4 sesi itu ya, itu kira menjadikan positif itu diri saya sendiri memang iya. Seperti sekarang, seperti keberhasilan. Keberhasilan itu saya juga senang, masalahnya apa, saya kan sudah pernah cerita ya kalau saya itu sudah berhasil mendidik anak dan istri.

These 4 sessions made me positive about myself. Like now, about success. Telling success makes me happy. As I told you, I have successfully educated my children and wife.

Even though no significant difference was shown by OHQ measurement tool, the reminiscence intervention provided positive emotions to increase confidence in facing difficult situations, sense of positivity, and self-confidence. Most participants did not experience positive changes related to connectedness with others. However, these sessions assisted participants in overcoming loneliness due to the absence of friends. Therefore, the intervention

impacted connectedness with others and rendered assistance in overcoming loneliness.

The sessions also reduced the stress and sadness felt before the sessions. Some participants also felt the benefits of being able to control negative emotions and increase happiness.

There was an increased level of enthusiasm due to the ability to tell stories expressively, such as crying, laughing, and singing memories. However, technical obstacles were experienced in running the intervention virtually, such as signal and power outages.

Discussion

The quantitative hypothesis testing in OHQ scale post-test scores showed an indication of a significant difference between both groups with limited strength. Yousefi et al. (2015) also reported an insignificant increase in happiness scores within the experimental group. This occurred due to the contribution of the control group which affected the positive feelings. There was interaction with the elderly during the sessions (Yousefi et al., 2015) to reduce loneliness.

Contextual effects and environmental factors also impact participants in the control group (Hafliðadóttir et al., 2021). The selected participants may also increase happiness scores, affecting the results. The increase in the follow-up results could be due to the impact of the non-specific intervention, namely the discussion of the current situation during the meeting process (Pinquart & Forstmeier, 2012). Therefore, the control group did not receive the intervention directly, and the participants were positively impacted.

The qualitative analysis showed that reminiscence intervention conducted in the experimental group increased positive feelings. Happiness, pleasure, relaxation, pride, enthusiasm, and satisfaction characterized the increase in positive feelings. These feelings have been described in several previous research (Yousefi et al., 2015; Ildarabadi et al., 2020; Mager & Steven, 2015; Firdaus et al., 2019). The elderly learn lessons, understand the principle of growth, as well as appreciate the impact of experiences and values in shaping lives (Ildarabadi et al., 2020). This intervention provides a positive value in life and contributes to the development of feelings (Firdaus et al., 2019).

The positive feelings were described by Mager & Steven (2015), where happiness increased after a short-term storytelling intervention session. Happiness also occurs because of a sense of pride in being selected as a participant, and feeling useful, valued and needed. This is in line with research on reminiscence intervention in hemodialysis patients. The results described increased mental health status through increased self-confidence and positive feelings about being useful (Ildarabadi et al., 2020). In addition, Firdaus et al. (2019) showed that the remembrance of

past successes and achievements also increased self-esteem.

Reminiscence intervention increases confidence in facing difficult situations (Firdaus et al., 2019), sense of positivity (Ildarabadi et al., 2020), meaning of life (Ildarabadi et al., 2020), and self-confidence (Ildarabadi et al., 2020). Therefore, the intervention helped participants to conduct personal evaluations (Diener, 2000), which is a sign of happiness (Lyubomirsky, 2007). The life satisfaction and quality of life of participants can also be increased (Shin et al., 2023).

The sessions conducted reduced the stress, sadness and negative emotions felt before the sessions. This was in line with Firdaus et al. (2019), where reminiscence intervention effectively reduced distress. Therefore, happiness increases positive emotions and reduces sadness, anxiety, and anger (Smith & Smith, 2015). According to Ng (2022), the feeling is characterized by fewer negative emotions. Topics regarding personal stories are also effective in reducing negative emotions (Shin et al., 2023).

Reminiscence intervention reduced loneliness even though changes were not experienced in the interactions with others. These results showed that the concept was used as a medium of interaction with the elderly (Yousefi et al., 2015) but additional analyses reported no significant difference between the pre-test and post-test. Some of the possibilities affecting the results are due to the time of data collection, placebo effect, characteristics of the subjects, and methodology. The time of data collection was conducted at an inappropriate time, allowing a decrease in happiness in the post-test scores of the groups. Poor timing in the post-test could also affect results (Diener et al., 2009; Velasco et al., 2016). In this context, the post-test data collection time was quite fast since the pre-test was 4 days. Therefore, the data generated was less than optimal and the frequency of positive experiences occurred only in a short time.

The placebo effect affected the happiness score of the pre-test in the experimental group. This occurred because the selected participants felt enthusiastic and desired to be productive. The presence of enthusiastic feelings tends to prompt positive responses, optimizing the resulting happiness value. During the process, participants provided real answers, causing the results in the post-test to be lower.

The characteristics of the subject and the existence of other variables also affect the results. Religious and physical activities, as well as good relationships with family and environment also affected the happiness of the elderly (Fauziyah et al., 2020). Therefore, some of the variables should also be considered during the initial assessment to determine the happiness of the elderly. According to Yousefi et al. (2015), the small

number of participants also impacted the results. The results showed that a smaller number of participants had a decreasing effect (Park et al., 2019).

Diener et al. (2009) reported that happiness was more related to the frequency of positive experiences than intensity. Therefore, there is potential to extend the intervention in enhancing happiness in the elderly. Several research provided significant changes (Firdaus et al., 2019; Zhou, 2012; Park et al., 2019) and the average frequency ranges from 4 to 11 sessions, lasting 30 to 60 minutes each week (Brooker & Duce in Lodha & Sousa, 2022). Meanwhile, there were no specific rules because the frequency and duration were adjusted to the needs of the objectives. In this research, the intervention sessions were only conducted on 4 consecutive days without a break which allowed participants to reflect on the intervention process. This prevented reminiscence intervention from reaching the participants' process of evaluating and reflecting on the events. The lack of time to provide opportunities for settling the material and reflection also affected the post-test results. Technically, the implementation of virtual intervention has several advantages. First, this method provides greater flexibility and can be performed anywhere and anytime. The intervention is beneficial for the elderly, specifically those with limitations in conducting face-to-face processes. Second, a more comfortable environment is provided for conducting the intervention session due to a more positive impact. The elderly become more expressive and the existence of several media contributes to improving the quality of the intervention sessions. Third, the emotions and expressions shown were effectively captured even though the intervention was conducted virtually.

This research has several limitations that need to be considered. First, a design using a quasi-experimental method has weaknesses in controlling variables. Some factors were not considered in the research planning stage, such as determining the number and characteristics of participants. Despite the limited sample size, useful preliminary insights were provided into the impact of the intervention on happiness. This intervention also energized individuals to have a healthy psychological and physical life (Ildabari et al., 2020). Considering the limitations, further research must be conducted on a more robust design and careful consideration to validate the results.

Conclusion

In conclusion, a significant difference was reported between the control and experimental groups on OHQ scale. This result was strengthened by the Happy Emotion Thermometer Scale, which showed an increase in happiness after the intervention of the experimental group. Therefore, virtual reminiscence

intervention positively impacted the happiness level of the elderly. The qualitative evaluation showed that participants experienced positive (happy, pleased, relaxed, proud, excited and satisfied) and negative emotions (loneliness, stress, and sadness). These factors were important and the intervention with the virtual reminiscence intervention positively impacted the happiness of the elderly.

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