

## Modeling and Behavior Rehearsal to Improve Communication Skills in Adolescent with Language Disorder

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### Abstract

**Background:** Adolescents with language disorder have significant language difficulties in many situations and impact their communication skills. Communication difficulties experienced by adolescents with language disorders can increase the risk of feeling anxious in social situations and having fewer peer relations. Therefore, interventions are needed that can optimize communication skills. **Objective:** The aim of this research is to find out whether modeling and behavior rehearsal can improve communication skills in adolescent with language disorder. **Method:** This research is a quantitative research that uses single subject ABA design. The participant is a 14-year-old girl with language disorder. There are 4 skills that are taught & observed, such as giving comments, asking relevant questions, asking the other person's opinion, and paying attention to the other person's attitude while speaking. **Results:** All communication skills is increasing, including ask the other person's opinion and provide comments that match with the topic. **Conclusion:** This proves that modeling and behavior rehearsal are effective in improving adolescent's communication skills with language disorder.

**Keywords:** Modeling; behavior rehearsal; communication skill; language disorder

### Abstrak

**Latar Belakang:** Remaja dengan *language disorder* memiliki hambatan yang signifikan dalam berbahasa di berbagai situasi dan itu berdampak pada kemampuan komunikasi. Kesulitan berkomunikasi yang dialami remaja dengan *language disorder* dapat meningkatkan risiko merasa cemas dalam situasi sosial dan memiliki sedikit relasi teman sebaya. Karena itu, dibutuhkan intervensi yang bertujuan untuk mengoptimalkan kemampuan komunikasi saat berinteraksi sosial, seperti bertanya dan memberi komentar. **Tujuan:** Tujuan penelitian ini adalah untuk mengetahui apakah penerapan teknik *modeling & behavior rehearsal* dapat meningkatkan kemampuan komunikasi pada remaja yang mengalami *language disorder*. **Metode:** Penelitian kuantitatif dengan desain *single subject research* ABA. Partisipan merupakan remaja perempuan berusia 14 tahun dengan *language disorder*. 4 target perilaku yang diobservasi yaitu memberi komentar, bertanya hal yang relevan, menanyakan pendapat lawan bicara, dan memperhatikan sikap lawan bicara saat berbicara. **Hasil:** Adanya peningkatan pada kemampuan menanyakan pendapat lawan bicara dan memberikan komentar yang sesuai topik pembicaraan. **Simpulan:** Teknik *modeling* dan *behavior rehearsal* efektif meningkatkan kemampuan komunikasi remaja dengan *language disorder*.

**Kata Kunci:** Pemodelan; latihan perilaku; kemampuan berkomunikasi; gangguan bahasa  
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Language disorder is usually discovered when a child is having speech delay at a developmental age or showing restricted early vocabulary than it should be. They also have problems understanding and remembering verbal information, and have difficulty telling stories coherently (American Psychiatric Association, 2022). If language difficulties are still experienced by children at school age, then there is a possibility that these difficulties tend to persist and can trigger language disorders in the future (Bishop et al., 2017).

Language disorder is a communication disorder that involves persistent difficulties in understanding and expressing language (Hardman et al., 2017; Kaderavek, 2015). The language abilities are substantially and quantifiably below what's expected for age. The symptoms are reduced vocabulary and comprehension, difficulties in forming sentence structures, and also difficulties in using vocabulary and connecting sentences in daily context (American Psychiatric Association, 2022). There are several factors influencing language disorders, such as biological, genetic and environmental factors. The biological conditions are neurological damage, lack of oxygen, and impaired hearing or vision (Hardman et al., 2017). Genetic factors are related to a family history of language disorders or speech delays (American Psychiatric Association, 2022). Meanwhile, environmental factors such as lack of learning opportunities or modeling (Hardman et al., 2017).

Persistent difficulties in understanding and expressing language can interfere child's communication functions, such as the willingness to socialize, asking questions, or expressing opinions. Language disorder also can disrupt child's communication skills (Hallahan et al., 2014; Owens, 2016). Apart from that, language become more substantial as child get older, both in social communication and learning context, making the condition of language disorder is a crucial influence on children's communication function (Tarvainen et al., 2021).

For adolescents, the need to socialize and establish social relationships with peers is important for their development (Santrock, 2015). Having language disorder does not negate the urge for adolescents to socialize and communicate with other people. Adolescents with language disorders remain involved in social relationships (Durkin & Conti-Ramsden, 2010). However, adolescents with language disorders experience difficulties in social interaction due to significant language deficit (Fujiki & Brinton, 2017). They want to interact with other people, but their language deficit make them compromise not to participate in daily interactions (Conti-Ramsden & Durkin, 2016). They have difficulty using basic social communication skills, such as turn-taking in conversations, giving comments, and responding according to the topic. They also appear less active in participating in groups and facing conflict (Fujiki & Brinton, 2017).

Communication problems experienced by adolescents with language disorders are also related to the emergence of socio-emotional problems. Those are known when they have difficulty communicating what they feel about themselves and others (Samson et al., 2020). Apart from that, the lack of development of the ability to understand social cues in social relationships is also related to the emergence of socio-emotional problems in adolescents with language disorders (Forrest et al., 2021).

Communication problems in adolescents with language disorders make them difficult to build and maintain positive friendship relationships. They also tend to have low emotional regulation abilities and self-esteem (Brinton & Fujiki, 2015; Conti-Ramsden & Durkin, 2016; Fujiki et al., 2002). They are also experiencing shyness and anxiety in social situations, have few relationships with peers, greater risk of victimization, social isolation, and are at risk of experiencing depression later (Arts et al., 2022). Apart from that, they are also at risk of showing hyperactive behavior and conduct problems (Conti-Ramsden & Durkin, 2016; Mok et al., 2014).

Similar problems are also experienced by a student named "A". A is an adolescent with language disorder. The presence of language difficulties in A affects her ability to communicate and relate with other people. A needs more time to understand the conversation and respond appropriately. A also has low self-confidence. She was more silent and not actively express her opinion during discussions. However, A still tries to greet other people by waving at them. A was also rejected and disturbed by her peers several times.

As an adolescent, A has a need to relate to peers and have good friendship quality. However, her interest in interacting with people is not matched by the expected other people's response.

A's teachers and parents are aware of those difficulties experienced by A. They also show some concerns regarding A's conditions. The teachers report that A got into a conflict with some of her classmates and then she tended to play alone. One study stated that teachers of children and adolescents who have language disorders assess that around 27-30% of their students have significant problems in relationships with peers (Lindsay et al., 2007). Other research also states that there is a trend of increasing problems with peers (peer problems) in adolescents with language disorders between the ages of 11 and 16 years old (Conti-Ramsden & Durkin, 2016).

Social communication problems in adolescents with language disorders require interventions that can optimize their language skills in social relation context. Social communication intervention is a variety of interventions that provide communication learning in important contexts in the lives of adolescents with language disorders (Arts et al., 2022). The focus of social communication intervention is optimizing interactions. However, at the same time, this intervention also facilitates learning of language content and structure in social relation context (Brinton & Fujiki, 2017). Pragmatic skills training for individuals with language disorders is needed to develop their social skills (O'Handley et al., 2016).

Social communication intervention often uses behavioristic principles (Fujiki & Brinton, 2017). Several studies use modeling and behavior rehearsal to train pragmatic & social skills to adolescents with language impairment/disorder. Modeling is the process of demonstrating or showing directly a series of new skills or behaviors that are to be taught to clients (Miltenberger, 2016). Reinforcement can be given immediately when the client is able to imitate the model's behavior correctly (Miltenberger, 2016). Meanwhile, in behavior rehearsal, clients practice a series of previously learned behaviors after receiving instructions from the therapist (Miltenberger, 2016). Behavioral rehearsal is also known as role play. In role play, clients practice a series of roles and related behaviors that have been previously learned in a training setting (Martin & Pear, 2015).

Research conducted by Brinton et al. (2004) applied behavioral rehearsal through games and role plays for adolescent with language impairment. The behavior rehearsal procedures were determining the conversation topic randomly, exchanging roles based on the chosen topic, and rehearsing the conversation several times. They also use live & symbolic modeling. The results showed that corrective feedback & prompts given by therapist were decreasing during the intervention process. In addition, other results showed an increase in response rates in socialization, both when practicing with a therapist and at home or in public places with peers. Another study by Azizah & Iswinarti (2021) on children with social communication disorder also used live modeling and role play. The results showed that clients were able to carry out the three target behaviors in everyday settings with their friends. This also has an impact on the attitude of the client's friends who are starting to want to invite and accept the client to play together.

The aim of this research is to find out whether modeling & behavior rehearsal can improve communication skills in adolescent with language disorder. Modeling and behavior rehearsal have been proven effective in improving communication skills in children and adolescents with language disorders (Azizah & Iswinarti, 2021; Brinton et al., 2004; Fujiki et al., 2013; Jensen de López et al., 2022; O'Handley et al., 2016). Modeling and behavior rehearsal are considered effective because it can increase the likelihood that clients will follow a series of target behaviors correctly in the real context (Martin & Pear, 2015). Reinforcement given when the client successfully carries out the target behavior has also been proven to be able to maintain changes in target behavior trained on clients with language and communication disorders (Azizah & Iswinarti, 2021).

## Method

### Participant

The participant was a 13 year old teenage girl named A. The WISC results showed that the participant's full IQ score was 72 with a verbal IQ score of 61 and a performance IQ score of 90. Observations of language development carried out based on the language and communication development guide by Owens (2016), showed that A's language development was equivalent to the language development of an 8 year old child. The socialization aspect is equivalent to the age of 8 years and the communication aspect is equivalent to the age of 10 years. A then received a diagnosis of language disorder based on the conclusions of the assessment results above.

The observation and interview results showed that A experienced difficulty in social interaction with her peers at school and home. She was mostly silent and occasionally responded to her friend's conversations with a smile. Her language and speaking difficulties often become a reason for her peers not to interact much with A. However, A is quite friendly and has invited her peers to interact several times. She several times responded to conversations with inappropriate reactions, such as telling jokes whose context was different from the topic of conversation, and was vulnerable to rejection and ridicule from her peers.

### Research Design

This research is a quantitative research. The research design was single subject research with A-B-A design, namely the baseline phase (condition A) and treatment (condition B). It aims to improve A's communication skills when interacting with peers. Four target behaviors were selected after providing informed consent and interviews with significant others as a form of willingness to participate in the treatment process. The behavior modification techniques used are modeling and behavior rehearsal with reference to research by Brinton et al. (2004) and Azizah & Iswinarti (2021), who train social interaction skills, social cues, and basic communication skills in children and adolescents with language impairment and social communication disorder.

### Procedure

Before administering the intervention, the author observed communication skills as baseline data. Then, the intervention was given for 8 sessions with a frequency of 2-3 times a week. Follow-up was given two weeks after the intervention to determine the progress after the intervention was implemented.

Table 1. Communication skills

Target behavior	
1	Make comments that are relevant to the topic
2	Ask questions that are relevant to the topic
3	Ask for the partner's opinion
4	Pay attention to the attitude of the other person when A speaks

During baseline, observations on four predetermined target behaviors were conducted. There were three sessions on three different days to see the consistency of the target behaviors being observed and obtaining reliable data. Each session lasted 30 minutes in an unstructured conversation setting with the author at school. The frequency of occurrence of the four target behaviors was recorded in an observation sheet. Baseline was conducted to identify A's initial communication skills before the intervention was implemented. The author also looked at what factors influence the formation of behavior.

The intervention was conducted in eight sessions with a duration of 30 to 40 minutes per session. The intervention was conducted in an individual session setting at school. Sessions 1 to 4 were started by watching videos with themes according to the socio-emotional problems experienced by A, such as bullying, conflict with peers, cyberbullying, friendship, communication with father, and social etiquette. The videos were reviewed together by showing several pieces of scenes and conversations that would be practiced during behavior rehearsal. After reviewing it, A was asked about her impression of the video. Then, behavior rehearsal was conducted by practicing the conversation learned from the model in the previous video. The author and A were also exchanging roles and conversations. Reinforcements were immediately given by praising or giving her favorite snack when A succeeded in imitating the interaction model correctly.

Table 2. Intervention procedures

Sessions	Techniques
Sessions 1 - 4	Video modeling (watching video & review) Behavior rehearsal (role-playing conversation from video modeling)
Sessions 5-8	Conversation game (choosing random topic & role-playing)

Sessions 5 to 8 started with a conversation game. At the beginning, A took 1 paper randomly and played a role together based on the topic written on the paper. The topics determined in this game were watching films with friends, making TikTok videos, favorite lessons and shows, winning competitions, ordering food and drinks, getting angry with friends, being bullied by friends, and playing at school. Role playing topics were adapted from A's social context. Then, the author mentioned two sentences related to the topic and A was coded to start the conversation. In the next topic, A started to say two sentences related to the topic and the author responded by starting a conversation. In the end, the author reviewed the speech and attitude models that emerged during the interaction. Reinforcements were given immediately by giving praise and her favorite snack when she successfully showed the target behavior or started the conversation first.

Follow-up was conducted 1 until 2 weeks after intervention to determine the extent of progress that maintained. There were 3 sessions on 3 different days. Basically, the procedure was similar with conducting baseline. Observation was conducted by measuring target behavior without any intervention. Observations lasted for 30 minutes in an unstructured conversation setting with the author at school. Psychoeducation was also given to the parents and teachers. The parents and teachers also gave feedback regarding the participant's communication skills. The data that were obtained at baseline, intervention, and follow-up were then compared to determine the development of the participant's communication skills.

### Data Collection

The research data was obtained from observations of target behavior at baseline, intervention and follow-up. The author observed 4 target behaviors in all sessions, including baseline, intervention, and follow-up. Then, the author counts each target behavior's occurrences to determine the participant's development. All sessions were recorded using a recorder device. The intervention could be said to successful if there was an increase in the frequency of the appearance of the target behavior from baseline to follow-up according to the previously agreed intervention target (Azizah & Iswinarti, 2021). Feedbacks from parents and teachers were also obtained from interview after all sessions in intervention were given. important to determine the progress seen in participant after receiving the intervention process.

### Data Analysis

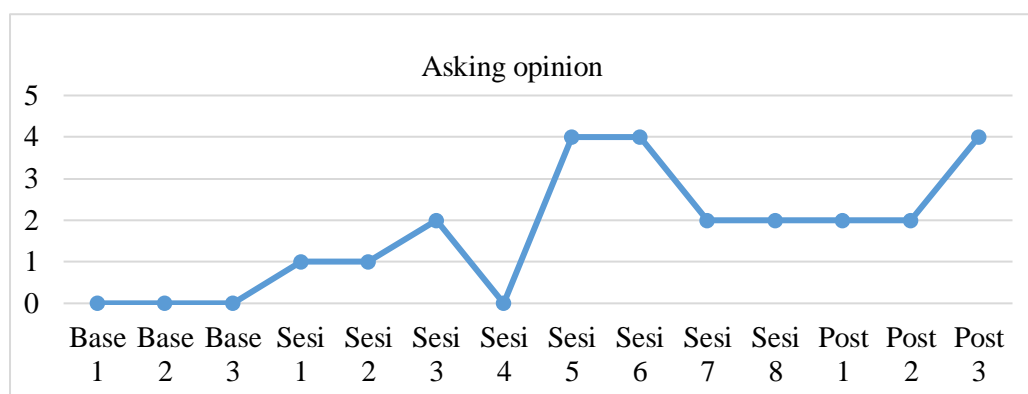
The observational data from all sessions were calculated. Data analysis was carried out by visual analysis using graphs or pictures to see the effect of the intervention provided. Visual analysis is used to see the relationship between the intervention and target behaviors (Kratochwill et al., 2021). Visual analysis seeks to display baseline pattern data, when the intervention is applied in each session or phase, then compare and see trends in changes in the target behaviors each phase, and integrate all the information in each phase to determine whether or not there is an effect of implementing the intervention on the target behaviors (Kratochwill et al., 2021).

## Result

The results showed that the frequency of all target behaviors were increasing during intervention and follow-up. The target behavior occurrences during baseline are low. During intervention phase, the target behavior occurrences tend to increase and maintained until follow-up sessions. The detailed explanations and visual analysis are given below.

### Asking Opinion

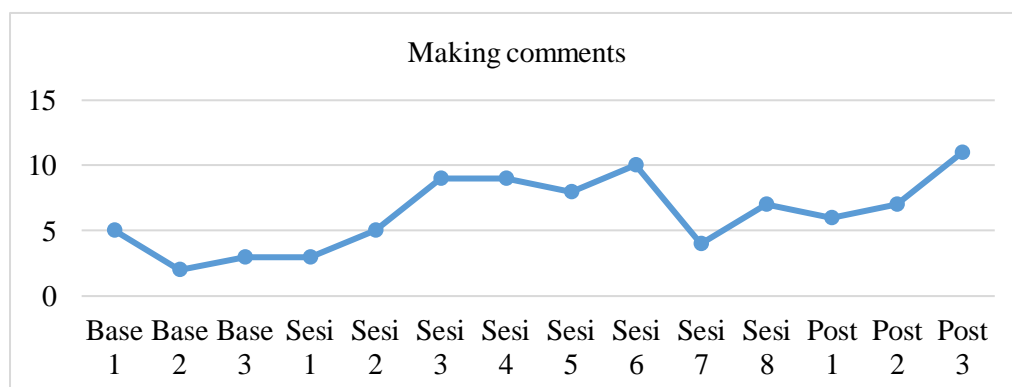
The behavior of asking partner's opinion did not appear at baseline, but began to consistently appear from session 5 to follow-up. Participant was more able to ask partner's opinion and reply with her own opinion. The trend of increasing ability to ask partner's opinion from baseline, intervention, to follow-up can be depicted in graph 1



Graph 1. Progress in asking partner's opinion

### Making Relevant Comment

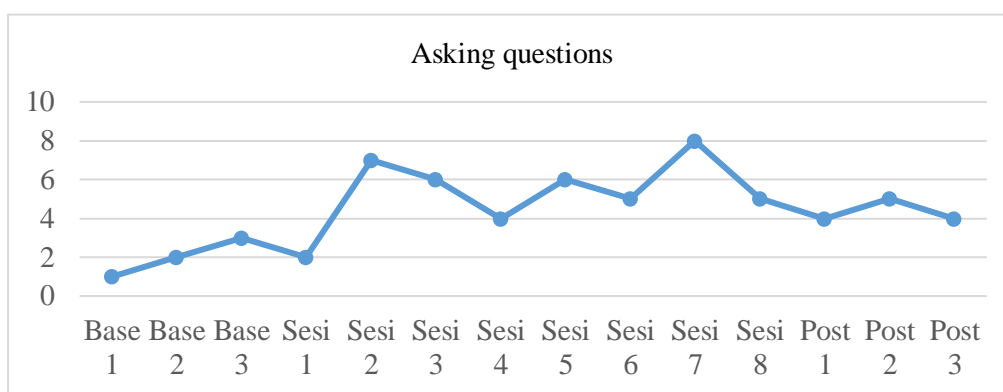
Participant was also consistently making more comments and asking questions related to topics since baseline. During intervention phase, A was more able to comment to several topics that related to her, such as winning a competition. The increasing trend in the ability to make comments relevant to the topic was depicted in graph 2.



Graph 2. Progress in making comments that relevant to the topic

### Asking Question

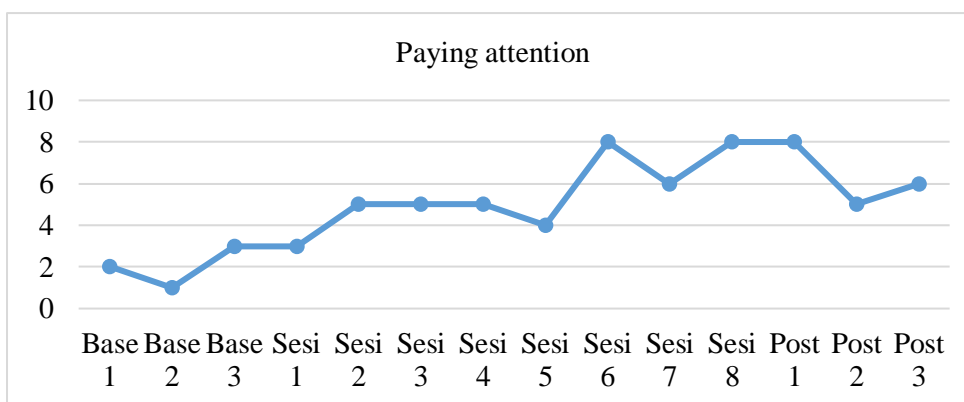
The ability to ask questions tended to increase and relatively higher during intervention until follow-up. When doing the conversation game, A seemed more active asking questions responding to some interesting topics, such as making TikTok videos. The increasing trend in the ability ask questions was depicted in graph 3.



Graph 3. Progress in asking questions

### Paying Attention

The increasing frequency of paying attention to other person while speaking tended to be consistent until follow-up. The participant tended to look at the person while speaking and make eye contact several times with the person she was talking to. Previously, A often lowered her head, looked down or to the side when speaking, and rarely made eye contact. The increasing trend in the ability to pay attention to other person while speaking was depicted in graph 4.



Graph 4. Progress in paying attention to other person

### Follow-Up

During baseline, A was still unable to determine the topic of conversation independently. There were also several conditions that influence the emergence of target behaviors, such as talking while playing a board game. During intervention, A seemed more interested in responding to conversations when using conversation games. This could be seen from the frequency of appearance of target behaviors in sessions 5 to 8 which tend to be higher than in sessions 1 to 4. This condition influenced her enthusiasm and initiation in responding according to conversation topics when role-playing. On several topics related to things that she considered fun, such as making TikTok videos and winning competitions, A immediately started the conversation even though it was our turn to start the conversation.

At follow-up sessions, the frequency of making comments and asking questions relevant to the topic showed a significant increase. She had begun to be able to determine conversation topics independently. She was also starting to be able to comment in the style of today's teenagers.

The feedback given by teachers tended to be positive. The teacher said that A had greeted friends and teachers more often, was better in conveying her opinions, and responded to conversations with appropriate comments. Several popular language sayings were also expressed, such as "*mau ikut dong*" ("wanna join too"), "*aku juga gitu lho*" ("me too"), or "*kamu pernah main juga gak?*" ("have you played it before?").

## Discussion

This study demonstrated that modeling and behavior rehearsal were effective in improving communication skills in adolescents with language disorders. The frequency of communication skills provided increased from baseline to follow-up. This study's findings are consistent with prior research that used modeling and behavior rehearsal to improve communication and social interaction skills in children and adolescents with language impairment (Azizah & Iswinarti, 2021; Brinton et al., 2004).

Using behavior rehearsal to improve pragmatic and social communication skills offers numerous advantages and positive effects for adolescents with language disorders (Abdoola et al., 2017). Role play, as a therapy strategy that emphasizes social and pragmatic communication skills, can boost participants' interest and involvement in the process. Participants appeared to enjoy role-playing exercises, and actively chose the roles and conversation themes to practice. Participants' active participation in the knowledge acquisition process allows them to make connections, resulting in a more meaningful training experience (Abdoola et al., 2017; Fujiki et al., 2013). Participants' interest and involvement in the intervention process have also increased since session 5, when behavior rehearsal was conducted. The frequency of target behavioral responses increased significantly compared to the baseline and previous intervention sessions.

During the intervention process, behavior rehearsal brings the real-world context to life for participants and allows them to practice a sequence of skills or behaviors in a realistic setting (Killen, 2015). This procedure increases the likelihood that participants will generalize their learned abilities when the intervention session is ended. Parent and teacher feedback before and after the intervention can be the data that showed generalization of the skills, validating the development of participants' abilities (Fujiki & Brinton, 2017). This condition is consistent with one study that used behavior rehearsal for students with language disabilities, demonstrating that pragmatic communication skills taught in role play can be generalized outside of the therapeutic context and last up to 6 weeks without intervention (Abdoola et al., 2017). In this study, the communication skills taught can be maintained for up to two weeks without assistance. Feedback from teachers and parents reveals a shift in the participant's communication model and attitude toward her school friends.

This study uses video modeling techniques to develop the participant's basic communication skills. The combination of video modeling and behavior rehearsal can also raise the frequency of target behavior by more than 100% during the intervention procedure. This is consistent with the findings of O'Handley et al.



(2016), who found that video modeling, behavior rehearsal, and self-monitoring can improve pragmatic and social communication abilities in children with specific language impairments. Using a variety of behavioral interventions can help children enhance their verbal and nonverbal communication abilities. The results of this study support the use of multi-component behavioral therapies in enhancing the pragmatic communication skills of children with language problems, when earlier research concentrated on the use of just one intervention strategy (Reynolds et al., 2014).

Communication and social skills issues are common in children and adolescents with language disorders, thus interventions can focus on influencing behavior or practicing communication methods in social interactions (Fujiki et al., 2013). Although these issues are common in children and adolescents with language difficulties, little research has been undertaken on communication skills therapies for adolescents with language disorders. More research has been undertaken on primary school-aged children, with either a single behavioral intervention strategy or many components (Adams et al., 2015; Fujiki et al., 2013; O'Handley et al., 2016; Reynolds et al., 2014; Tierney et al., 2014). Only one study by Brinton et al. (2004) has examined the use of behavioral intervention in adolescents with language disorder, so this research addresses the shortcomings of previous research and shows that the form of behavioral intervention applied to elementary school aged children can also be useful for adolescents.

However, there are a number of limitations in this research. Researchers and therapists must exercise greater caution when selecting conversation subjects that will pique the interest of participants or adolescents in general. This circumstance occurs when the topic of conversation is sensitive to the participant (communication with father, disruption by friends, argument with friends). Even if those issues are important and relevant to the participant's setting, researchers or therapists must exercise caution when bringing them up in conversation in order to avoid offending or making the participant uncomfortable throughout the intervention process.

Another limitations from this research is that this research only included one individual with specific disorders, therefore generalizations can only be made to participants who meet the same criteria. Another factors, such as time and history, also can affect the target behaviors. Therefore, using another research design (multiple baseline, A-B-A-B) and more participants are suggested to more establish the functional relation between the intervention and the target behaviors. The author additionally guaranteed that the participants' parents implemented this behavior modification strategy after the intervention was completed, particularly to practice communication strategies with others and peers.

## **Conclusion**

It was concluded that modeling and behavior rehearsal can improve communication skills in adolescents who experience language disorders. Participants' verbal and nonverbal communication abilities experienced a significant increase, and could even be applied in contexts outside the intervention session. In particular, the use of multi-component behavioral interventions addresses the shortcomings of previous research which focused more on the use of only one behavioral intervention technique. The implementation of these two intervention techniques to adolescent shows the usefulness of this intervention in a wider age range, not just childhood. The trained communication skills can also last for 2 weeks after the intervention is completed. The involvement and assistance of the participants' parents and teachers is one of the things that supports monitoring the progress of the participants even until the intervention is completed. Some limitations in this research, such as generalization issues, topics used in the intervention, and research design also need to be considered in future research.

## **Suggestion**

Suggestions that can be made in further research is modifying the research design. The use of an A-B-A-B or multiple baseline research design can be considered in future research so that the effectiveness of the intervention or the functional relationship between the intervention and the behavior changes that occur can be more certain. Multiple baselines can also be used to ensure the effectiveness of the intervention in several behaviors or problems in participants.

The author also advises parents, especially participants' fathers, to increase communication and joint activities with participants to develop forms of social communication, especially with men. Another suggestion for teachers is that teachers can modify instructions, questions and student learning materials by using more visual media such as pictures, graphs, videos or posters, especially for students with language disorders. It is also hoped that this research can provide recommendations for parents and teachers regarding strategies for training social communication for students with language impairment or language disorder.

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