Token Economy as the Intervention of Self-Injurious Behavior in Students with Mental Retardation

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Abstract
Self-injury in children with mental retardation is caused by their inability to express their feelings and emotions. This study aimed to describe self-injury experienced by students with mental retardation and examine the influence of the token economy on the self-injury of students with mental retardation at the special school (SLB) Bhakti Pemuda, Tamanan, Kediri. The study used a quantitative approach with experimental methods based on the pre-experimental design with the one-group pretest posttest design. Based on the exclusion criteria, there were five children experienced mental retardation, and they were selected using the purposive sampling technique. The researchers conducted a pre-test, treatment, and post-test. The data was analyzed using the IBM SPSS 20 program. The results showed that the self-injury in students with mental retardation at SLB Bhakti Pemuda, Tamanan, Kediri included hitting themselves, hitting tables and chairs, running, pulling their hair, hurting themselves using pencils, experiencing anxiety continuously, and being unable to control emotions.

INTRODUCTION
Special schools (SLB) are educational spaces for students with various special needs, including students with mental retardation. The problems faced by students with mental retardation include difficulties in learning and thinking, uncontrolled emotions, and low memory. According to Dewi et al (2018), the characteristic of students with mental retardation can be seen in cognitive functions in learning. Undeniably, someone with mental retardation has difficulties in learning. According to Frieda Mangunsong (2014), students with mental retardation experience various problems in learning, which can inhibit the learning process, including the process of thinking, understanding, and memory. These obstacles become the characteristic of students with mental retardation. Mental retardation is divided into several categories, namely mild, moderate, and severe, based on the obstacles experienced in daily activities. Mental retardation is a term for people with intellectual and cognitive abilities below the general average; usually, it is detected since childhood.

According to Dunn, John M. in (Adimayanti & Siyamti, 2019), mental retardation is a complex condition experienced by someone with low cognitive ability
According to Hallahan in (internal),

experienced by intensity foundation trust burning emotional formation, bodies. According to body parts using Sabrina's continuously quietly, make them has below feelings and release were students themselves. In the learning process, researchers channel emotions properly.

While everyone has feelings and emotions, those who experience distress and emotions that are done negatively and have negative effects. To respond well to emotions through an addictive behavior response, it does not harm them and has no negative effects. To respond well to emotions, individuals require appropriate resolution to control emotions and to give respond exaggeratedly. Inability to control their emotions can cause distress and emotions that are done negatively and have negative effects such as self-injury (Edi purwanto, 2012). According to Jenifer, self-injury is done without intending to commit suicide (Kurniawaty, 2012).

Self-injury is done when individuals feel that they are experiencing internal distress McCullough et al (2002) and cannot say what is being experienced and felt. While everyone has feelings and emotions, those who experience self-injury cannot channel emotions properly and convey emotions experienced without harming themselves. In the learning process, researchers found several circumstances; 2 out of 5 students experienced self-injury because they were not listened to what they wanted and were not given flexibility in saying their feelings. As a result, they harbored their feelings and released what was felt by carrying out self-injury, such as hitting themselves, hitting tables and chairs, running, pulling their hair, hurting themselves using pencils, experiencing continuous anxiety or frustration, and having a low level of memory and anger. This follows the statement of Kanan & Linda (2008); they say that self-injurious behavior is done if an individual cannot express emotional feelings and has below-average intelligence, such as low memory.

Emotions that cannot be expressed directly by children with mental retardation make them carry out self-injury, such as hitting themselves, cutting, not being able to sit quietly, pulling their hair, hurting themselves using pencils, experiencing anxiety continuously, and being unable to control emotions. This behavior is in line with Sabrina's statement in Estefan & Wijaya (2014), stating that self-injury includes hurting body parts using sharp objects, hitting themselves, pulling hair, and burning their bodies. According to the statement of Jennifer Knigge (1999), in the process of emotional formation, self-injury is characterized by cutting, hitting, pulling hair, burning, and disturbing wounds that will heal. According to Mersey care NHS foundation trust (Muslimah Zahro Romas, 2010), self-injury which is done in mild intensity, is overworking and drinking alcohol excessively. Meanwhile, the self-injury experienced by students with mental retardation in SLB Bhakti Pemuda, Tamanan,
Kediri was in the form of hitting themselves, hitting tables and chairs, running, pulling their hair, hurting themselves using pencils, experiencing anxiety continuously, and being unable to control emotions.

Children with mental retardation experience barriers in cognitive development and experience addictive behavior, such as beinglonely, quiet, unable to concentrate thoughts, and having unstable emotions (Novita, 2014). Children with mental retardation who experience cognitive barriers can cause distress in solving their problems, causing individuals to carry out self-injury. Unstable emotions that cannot be expressed can burden someone, so the emotions cause psychological pain and then are conveyed by self-injury. This is in line with the statement of Estefan & Wijaya (2014) that emotional pain causes individuals to carry out self-injury.

Human behavior can be changed by using interventions with various approaches and techniques. In addition, changes in one's behavior are influenced by internal factors (oneself) and external factors, namely the environment. Changing human behavior requires techniques with various approaches and theories (Fahrudin, 2012). One of the techniques that can be used in changing self-injurious behavior is using a token economy.

The token economy is one of the forms of behavior modification designed to improve desired behavior and reduce disfavored behavior by using tokens (T Ayllon, 1999). This follows the statement of Lahamutu (2020) that the behavior modification technique using token economy is used as reinforcement to reduce the behavior to be changed and to reinforce desired behavior. Providing token economy to students who experience self-injury can help emphasize the negative behavior that exists in students. The tokens given in the form of collected stickers were then exchanged for prizes. There has not been much research on the token economy against self-injury in students with mental retardation. However, several research articles with the same variable were conducted by Meilatri (2019) as it is known that the token economy can reduce self-injury. This is in line with the research conducted by D, Saputra dan M.P (2019), which shows that the application of the token economy significantly reduces self-injury. Another research result from Alstot (2012) states that there is a change in behavior using the token economy due to the presence of reinforcements. Specifically, it was found that the token economy can change negative behavior Kikiany (2017) and self-injury in children with mental retardation (Lafitiana & Ardianingsih, 2016).

Based on the description above, the self-injury behavior, such as hitting himself, hitting tables and chairs, running, pulling his hair, hurting himself using a pencil, experiencing anxiety continuously, and being unable to control emotions, are in line with Jennifer Knigge's statement (Maidah, 2013a). She states that in the process of forming emotions, self-injury is characterized by cutting, hitting, pulling hair, burning and disturbing wounds that will heal. Referring to the explanation above, the study of token economy and self-injury is considered necessary to be developed. The
phenomenon of self-injury, especially in students with mental retardation, often occurs that is caused of the limitation in controlling emotions and cognition that is below the average. This study aimed to describe self-injury experienced by students with mental retardation and examine the influence of the token economy on self-injury in students with mental retardation in SLB Bhakti Pemuda Tamanan, Kediri City. The community can make a reference for handling the same case through this research.

Based on the explanation above, this article aimed to examine the influence of the token economy on self-injury in students with mental retardation in SLB Bhakti Pemuda. Researchers also assumed that the influence of the token economy on self-injury in children with mental retardation needs to study further to ensure that self-injury can be reduced by using the token economy method as reinforcement of targeted behavior by researchers. This is in line with the statement of Kikiany (2017), that modifications using the token economy reduce defiant behavior in children with the oppositional defiant disorder.

METHOD

This study used a quantitative approach using pre-experimental with the design of the one-group pretest posttest design. The data of quantitative research is in the form of numbers that can be analyzed using statistics to test hypotheses that have been determined (Mulyadi, 2013). According to Seniati (2005), this study only uses one experimental group without comparing the data with the control group. This method was used to determine the effect between the independent variable and the dependent variable. In this study, the population was students of SLB Bhakti Pemuda, Tamanan, Kediri City. The sampling technique used in this study was purposive sampling. Purposive sampling is a sampling technique with certain considerations (Sugiyono, 2006).

The purposive sampling technique was used with certain considerations, such as the characteristics of the sample used in this study, namely students with mental retardation that hurted themselves, pulled their hair, and cut their body parts. In this study, the population was 43 students, and 38 students did not carry out self-injury. Thus, the participants of this study were five students with mental retardation who carried out self-injury.

Before doing a pre-test, this study has been received approval from various parties. This research involved teachers and students with mental retardation at SLB Bhakti Pemuda, Tamanan, Kediri. This research was begun with the search for students with mental retardation who experienced negative emotions that caused self-injury. The type of intervention used in this study was the token economy. The token economy is behavior modification by giving tokens (signs in the form of stickers) to bring up positive behavior and decrease negative behavior. The token economy can also be considered as the application of operant conditioning by giving rewards directly and can
be exchanged for an agreed prize. The advantage of the token economy as reinforcement of targeted behavior in this study can be motivation and reward, which is done directly so that it can please the students and stimulate the development of positive behavior in the students.

To facilitate this research, researchers asked permission from the school in advance regarding the implementation of activities and asked for teachers’ assistance so that the implementation process was more targeted and easier. The procedures carried out include 1) the implementation stage, which includes determining the behavior to be changed, determining the goods to be used as exchange tools, giving value to the targeted behavior with stickers, and setting the price of the goods exchanged with stickers. 2) the implementation stage began with making an agreement between the students, researchers, and teachers, then giving stickers if the targeted behavior appears; after one week, the stickers will be exchanged for the desired goods based on the agreement. 3) the evaluation stage was carried out to determine the changes in the observed behavior.

The data collection technique in this research used the pre-test post-test design by observing the students’ behavior before (pre) and after (post) the intervention was given, and interviewing teachers and parents of students at SLB Bhakti Pemuda, Tamanan, Kediri. This documentation was used to describe the students’ behavior and find out the students with mental retardation. Based on the data provided by the school, it was known that students who experienced mental retardation at SLB Bhakti Pemuda, Tamanan, Kediri, were 43 students, and five students experienced self-injury behavior. Data analysis was done by taking initial measurements of the students studied through a pre-test to measure the dependent variable (Rukminingsih et al., 2020). Then, the researchers gave treatment by applying the token economy. After that, the researchers took a final measurement and carried out a post-test to determine the influence of the token economy on self-injury. The instrument used was a scale of self-injury adopted from Dinar Saputra based on the Burrhus Frederic Skinner behavior theory with a reliability value of 0.994.

While the behavior observation checklist used during the treatment was made by the researchers referred to the existing theory. The targeted behavior, the number of tokens, and the number of tokens to be exchanged with rewards have been determined. Data analysis was done using the paired sample t-test with the help of the IBM SPSS 20 statistical program.

RESULTS

The results of this study provide empirical evidence of the hypotheses that researchers have carried out. In this study, the researchers conducted a pre-test, treatment, and post-test to determine the changes in self-injury. After knowing the number of children who carried out self-injury, the researchers made an observation...
sheet with a list of the targeted behavior. This behavior was observed and recorded for six days during the pre-test and six days during the post-test. The results of the calculation of the pre-test and post-test can be seen in the Table below:

<table>
<thead>
<tr>
<th>No</th>
<th>Initials</th>
<th>Pre-test Scores</th>
<th>Post-test Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Student 1</td>
<td>124</td>
<td>86</td>
</tr>
<tr>
<td>2</td>
<td>Student 2</td>
<td>128</td>
<td>73</td>
</tr>
<tr>
<td>3</td>
<td>Student 3</td>
<td>131</td>
<td>72</td>
</tr>
<tr>
<td>4</td>
<td>Student 4</td>
<td>117</td>
<td>91</td>
</tr>
<tr>
<td>5</td>
<td>Student 5</td>
<td>126</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>626</td>
<td>374</td>
</tr>
</tbody>
</table>

The table above shows that the highest score of the pre-test is 131 and the lowest score is 117, with a total score of the pre-test of 626. While at the post-test, the highest score is 91, and the lowest score is 50, with a total post-test score of 374.

<table>
<thead>
<tr>
<th>Description</th>
<th>Observation score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial conditions</td>
<td>Final condition</td>
</tr>
<tr>
<td>Average Score</td>
<td>125.2</td>
</tr>
</tbody>
</table>

The average score of the pre-test is 125.2, which shows the initial condition of self-injury in students, while the average score of the post-test is 74.4. Based on the pre-test and post-test results, the average post-test score is lower than the average pre-test score, which is still very high, with a score difference of 51. The average score obtained showed that self-injury was reduced compared to the initial condition after getting treatment in the form of the token economy.

After the researchers conducted a pre-test, they also gave intervention in the form of the token economy for six days to students who carried out self-injury with the help of the teachers. The scores obtained by students who carried out self-injury for six days during the treatment can be seen in the Table below:

<table>
<thead>
<tr>
<th>Initials</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 1</td>
</tr>
<tr>
<td>Student 1</td>
<td>18</td>
</tr>
<tr>
<td>Student 2</td>
<td>18</td>
</tr>
<tr>
<td>Student 3</td>
<td>18</td>
</tr>
<tr>
<td>Student 4</td>
<td>16</td>
</tr>
<tr>
<td>Student 5</td>
<td>18</td>
</tr>
</tbody>
</table>

The table above shows that on the first day an intervention was carried out using token economy, student 1 obtained tokens or six stickers. Researchers did this for six days on all students. On the sixth day, the first student obtained 18 tokens in the form of stickers. To determine the influence of the token economy on self-injury,
researchers conducted a hypothesis test using the paired t-test showing that there is a contribution between the token economy and self-injury in students of SLB Bhakti Pemuda, Tamanan, Kediri.

<table>
<thead>
<tr>
<th>Table 4. Paired T-Test</th>
<th>Paired Samples Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Pair 1</td>
<td></td>
</tr>
<tr>
<td>Post-test</td>
<td>74.40</td>
</tr>
<tr>
<td>Pre-test</td>
<td>130.80</td>
</tr>
</tbody>
</table>

The paired t-test shows a mean value of the pre-test of 130.80, while the mean value of the post-test is 74.40. The number of participants in this study was five students. Moreover, the standard deviation value in the pre-test is 12.950, while in the post-test is 15.915. The standard error in the pre-test is 5.791, while in the post-test is 7.118. This shows that the final test is lower than the initial test, but the distribution range of the final test is also wider and with a higher standard error.

<table>
<thead>
<tr>
<th>Table 5. Test Paired T-Test</th>
<th>Paired Sample Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair 1</td>
<td></td>
</tr>
</tbody>
</table>

The paired sample test table is the main output table showing the results of the tests performed. This can be seen from the significance value (2-tailed). The value of the t-test is 6.719, with a significance of 0.003. Thus, it can be concluded that the token economy significantly contributes to the changes in self-injury behavior of students with mental retardation at SLB Bhakti Pemuda, Tamanan, Kediri.

**DISCUSSION**

Students with mental retardation in SLB Bhakti Pemuda, Tamanan, Kediri experienced barriers that cause children to be unable to control their cognitive with low intellectual functions. As a result, they experienced barriers in behavior that can influence psychomotor in the form of self-injury. Being able to control emotions and express feelings is very important to avoid negative behavior. In this study, based on observations and interviews results, it was known that self-injury carried out by students with mental retardation at SLB Bhakti Pemuda included hitting themselves, hitting tables and chairs, cutting part of the bodies, pulling hair, hurting themselves, experiencing anxiety continuously, and being unable to control emotions.
Based on the analysis above, it was assumed that the token economy affected self-injury. This is supported by the research of D. Saputra & M.P (2019), stating that the application of the token economy significantly influences self-injury. The token economy is carried out using reinforcement based on Hamid in (Firdiana et al., 2020), which reduces negative behavior in children with behavioral disorders. According to Ramadhani & Aulia (2020) the token economy has several advantages in the form of rewards given directly and physically that can please students. This token economy has been widely used in various institutions such as hospitals, prisons, psychiatric units, and education so it can form the behavior desired by researchers.

The study results show that the token economy influences children with mental retardation. This can be seen from the reduction of doing negative things such as hitting themselves, hitting tables and chairs, running, pulling their hair, hurting themselves using pencils, experiencing anxiety continuously, and being unable to control emotions. This is in line with the statement of Estefan & Wijaya (2004), which states that the forms of self-injury are scratching or pinching parts of the body until a wound arises, hitting objects into their body parts until there are scars, making scratches or certain forms of parts of the body, burning the skin, and pulling their hair in large numbers. The same opinion was also expressed by Maidah (2013b), who states that self-injury is self-harm and self-destructive behavior; still, people do this to overcome emotions that cannot be held back or they are discomfort with something that happens. According to Bentley et al (2014), self-injury can be done in various ways, such as scratching, hitting himself, scratching part of the body until it is injured, cutting, and burning.

In this study, based on the results of observations and interviews, it was known that self-injury carried out by students with mental retardation in SLB Bhakti Pemuda, Tamanan, Kediri included hitting themselves, hitting tables and chairs, cutting part of their bodies, pulling their hair, hurting themselves, experiencing anxiety continuously, and being unable to control emotions. Researchers used token economy to reduce self-injury and negative behavior and improve positive behavior. This follows the statement of G. Corey (2007), which states that the behavior can be formed by giving gifts or reinforcements as soon as possible after the expected behavior appears. It becomes a very supportive way to change behavior.

The previous explanation, which states that the token economy contributes significantly to decreasing self-injury, can be known from the results of this study that the token economy influences self-injury behavior. This result is supported by previous studies, such as the research result of Nurfadilah (2021), which states that it is necessary to modify behavior to improve children's behavior in overcoming self-injury. The token economy is one factor that can influence self-injury behavior changes. This can be seen from the paired t-test or the number of contributions made by the token economy to self-injury of 6.719. Thus, it can be interpreted that there is an influence of the token economy on self-injury.
Basically, the token economy has a positive impact on decreasing self-injury behavior. If the student can control his emotions and get support from his environment by doing token economy, then the student will experience a decrease in self-injury behavior. This follows the results of the intervention carried out by the researchers that shows that there is a decrease in self-injury after the treatment, starting with changes in students’ behavior and thinking.

Token economy carried out by researchers assisted by class teachers to reduce self-injury has been carried out based on the rules, but there are obstacles in the implementation process. One of the obstacles in this study is the preparation of the token economy, which requires precision to determine the price of the behavior that has been targeted. However, this can be anticipated by discussing items that the students like to use as gifts with the teachers. This was done by researchers based on the statement of Purwanto (2012) that teachers can choose goods or desires by looking at children's habits and asking the students about the preferred items as gifts.

In addition to the decrease in self-injury, there were other findings that the students reperformed self-injury three times a day. The re-emergence of self-injury behavior is due to factors not suspected by the researchers; during three days, the students did not enter school and were at home with their two parents. The role of parents is significant in shaping children's behavior (Hidayati, 2021). The student's parents, who are less supportive and do not provide space to express their feelings, are one of the factors that they feel unappreciated and unacceptable by both parents. In addition, their condition after returning to school made them less able to control their emotions. However, the frequency of self-injury after the treatment was lower than before the token economy was given. Before being given the token economy, the students carried out self-injury five times a day, but after being given the token economy, self-injury was carried out once a day. Then, at the time of follow-up evaluation in the following month, the students again carried out self-injury three times a day.

From the process of reducing self-injury done using the token economy, it can be said that the token economy has a positive effect in reducing self-injury. One of the factors is that, in token economy intervention, the students get the prize directly according to their preferred one. Administration of treatment may encourage the students to behave in accordance with the targeted behavior. This study shows that the behavior of self-injury decreases after being given the token economy; this can be interpreted that if the token economy is carried out continuously, then self-injury in students will decrease. Suppose the students have been conditioned not to refrain from the behavior that has been targeted. In that case, without any token, the student will be accustomed to refraining from doing self-injury. This is in line with research conducted by (Muriyawati & Rohmah, 2016), which says that the given method in the form of the
token economy using pieces can reduce negative and is effective to be carried out at all ages.

CONCLUSION

Research results show that the self-injury carried out by students with mental retardation in SLB Bhakti Pemuda Tamanan is due to factors from the family and the lack of control in expressing emotions that are being experienced. Behavior that emerges from students with mental retardation in this study includes hitting themselves, cutting parts of their body, not being able to sit calmly, pulling their hair, hurting themselves, experiencing anxiety continuously, and being unable to control emotions. Researchers conducted a token economy to reduce self-injury behavior in students.

SUGGESTIONS

From the problems underlying the research related to students who cannot control emotions so that they carry out self-injury, it is expected that both parents of the students provide space to express their feelings and support them even at home. Teachers and students’ parents should apply the token economy that researchers have done. Researchers have scheduled follow-up mentoring for students as a form of responsibility and moral support.

Further researchers are recommended to discuss the causal factors of children with mental retardation who carry out self-injury because the factors influence the level of self-injury. Moreover, further researchers should also pay more attention to several things, such as the selection of journals as references so that they can be developed and used as examples to provide treatment for children with mental retardation who carry out self-injury.

REFERENCES


