Grit Mediation: Effect of Teaching Experience and Training Participation on Self Efficacy for Special Education Needs (SEN) Teachers

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Abstract. Teachers of Children with Special Needs in inclusive schools and Special Schools (SLB) often experience difficulties in carrying out their duties. The various challenges and obstacles that cause these difficulties have an impact on low self-efficacy, even though they have carried out their duties as children with special needs teachers for several years and have attended training. This research includes grit as a mediator in looking at the effect of teaching experience and training participation on their self-efficacy. This research is quantitative research using a correlational model. A total of 301 special education needs teachers participated in this research using a purposive sampling technique, consisting of 225 women and 76 men at various school levels. Data collection was carried out using questionnaires and scales that were tested using the Confirmatory Factor Analysis (CFA) method from Structural Equation Modeling (SEM). Data were analyzed using path analysis in Jeffreys' Amazing Statistics Program (JASP). The results of the research show that all variables are positively correlated. Teaching experience and participation in training increase the teaching efficacy of special education needs teachers, with the mediation of grit. The correlation between grit and self-efficacy has the highest coefficient compared to the variables of teaching experience and training participation. The implications of this research show the importance of grit in increasing the self-efficacy of teachers of children with special needs, beyond the teaching experience and training attended.

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1 Introduction

Many teachers have insufficient knowledge in teaching and handling children with special needs so they feel worried about their abilities. Teachers have difficulty doing a variety of work in dealing with special needs students, have difficulty solving problems, and easily give up if they are unable to face unpleasant situations. Thus, it is not enough for teachers to only have academic competence in teaching, but also need other factors, one of which is self-efficacy.

Self-efficacy is an individual's belief in his ability to complete assigned tasks and achieve desired goals. In the educational context, teacher self-efficacy refers to their confidence in teaching and influencing student development. Research shows that teachers' levels of self-efficacy are significantly correlated with their performance in the classroom, motivation to develop themselves, and attitudes toward challenges in teaching (Bandura, 1997). Therefore, it is important for teachers to have a high level of self-efficacy in teaching so that they can effectively guide and support the development of students and special needs students.

Teacher self-efficacy is influenced by internal and external factors (Kristiana, 2018). It was further explained that external factors involve support from the school and management, the availability of adequate resources, and educational policies that support inclusive practices. Wray, et al (2022) explain examples of school climate such as leadership support and collaboration/cooperating with various parties in all processes in the school. A positive school climate can predict teacher self-efficacy for inclusive education for students (Wray, et al, 2022). Apart from that, other external factors are factors that have an influence on demographic efficacy that affect self-efficacy, such as the teacher's teaching setting (primary or secondary school), teaching experience, age and gender.

Internal factors include the teacher's personality, interaction experience or teaching experience with children with special needs, and the teacher's experience in participating in training. Experience on attending training can enhance professionalism in teaching and become predictors of teacher self-efficacy. This is similar to the finding of a research (Wray, et al, 2022) that experience on teaching or interacting with children with special needs, education and teacher training influence self-efficacy. The majority of research findings report that experience on interacting with people with disabilities (through family, friendship, or work) is a significant predictor of teacher self-efficacy for inclusive education. The higher the level of personal interaction with people with disabilities, the greater the sense of self-efficacy for providing inclusive classrooms. Furthermore, knowledge about inclusive education policies increases teacher self-efficacy. Teachers' pre-service education, professional learning and contact experience with people with disabilities also influence efficacy.

Other research reveals that teacher self-efficacy is proven to be positively correlated with instructional experience factors, namely teaching experience and years of teaching (Huang, et al, 2007; Lee & Tsai, 2010). Research conducted by Dewi, et al (2020) found that teachers who have broader teaching experience tend to have a better understanding of the needs of children with special needs in the learning process. This is in line with research conducted by Ramadhan & Rahmandani (2021) which shows that teachers' teaching experience has an impact on their ability to educate children with special needs.

Teacher participation in training also has an influence on self-efficacy. Purnomo (2016) found a correlation between the teaching ability of accompanying teachers specifically for inclusive schools and training participation. In addition, Rudiyati (2013) also found that collaborative learning training and workshops contribute to increasing the professional competence of inclusive school teachers in handling children with special needs.

According to positive psychology, every individual has the potential to increase their resilience when facing difficult situations. This potential tends to persist over the years to help individuals master a particular field of interest. This ability is Grit (Ibrahim & Mohamad, 2018). Grit is persistence and strong interest/spirit (passion) to achieve long-term goals (Duckworth, Petterson, Matthews & Kelly, 2007). Grit directs individuals to work hard in the face of challenges, maintaining effort and interest over the years despite failure, difficulties, and uncertain progress. For teachers of children with special needs, the diversity of students' conditions demands attention, creativity and teacher skills to accompany their students.

The framework of this research is to study the influence of teaching experience and training participation on the self-efficacy of teachers for children with special needs through the mediator grit. The framework was built based on study on the self-efficacy of teachers of children with special needs and the factors that influence it.

The specific research questions and its corresponding hypotheses are as follows:

RQ 1. Is there any influence of teaching experience and training participation through *grit mediators* on the self-efficacy of teachers of children with special needs?

Major hypothesis: There is an influence of teaching experience and training participation through grit mediators on the self-efficacy of teachers for children with special needs.

RQ 2. Is there any significant positive influence *of grit* on teacher self-efficacy?
Minor hypothesis: There is a significant positive influence of grit on teacher self-efficacy.
RQ 3. Is there any significant positive influence of teaching experience on teacher self-efficacy?
Minor hypothesis: There is a significant positive effect of teaching experience on teacher self-efficacy.
RQ 4. Is there any significant positive effect of training participation on teacher self-efficacy?
Minor hypothesis: There is a significant positive influence of training participation on teacher self-efficacy.
RQ 5. Is there any significant positive influence of teaching experience on teacher *grit?*
Minor hypothesis: There is a significant positive influence of teaching experience on grit.
RQ 6. Is there any significant positive effect of training participation on teacher *grit?*
Minor hypothesis: There is a significant positive effect of training participation on grit
RQ 7. Is there any significant positive correlation between teaching experience and training participation?
Minor hypothesis: There is a significant positive correlation between teaching experience and training participation.

Based on the theoretical basis and previous research findings, we developed an influence model below:

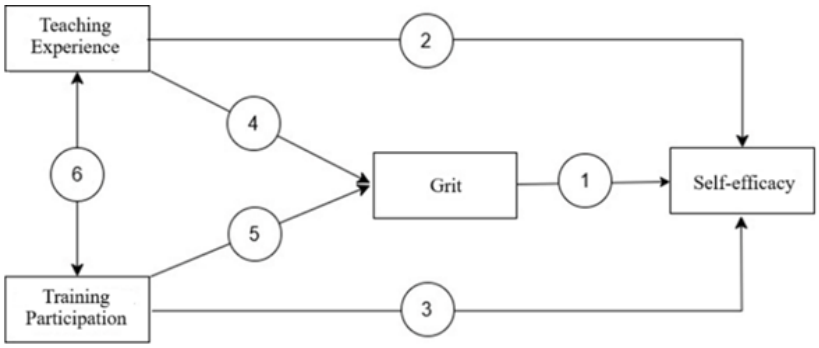

Fig. 1. Research Framework

This research uses a positivism paradigm or quantitative approach. Research data is based on facts and problems collected systematically through plans and adhering to the principles of measurable, observable and verified. Based on the objectives, this study is classified as an *explanatory type of research*.

2 Methods

2.1 Participants

Participants in this research is 301 teachers of children with special needs, consisting of 71 teachers of special schools (23.6%) and 230 teachers of inclusion schools (76.4%) obtained through incidental sampling techniques. Furthermore, the subjects in this research included teachers of children with special needs from various levels; 154 elementary school teachers (51.2%); 125 junior high school teachers (41.5%); and 22 high school teachers (7.3%). Most of the teachers in this study were women, accounted for 225 teachers (74.8%); 264 teachers are non-civil servant (87.7%); 153 teachers are in 26-35 year age group (50.4%); and 289 teachers have bachelor's degree as their last education degree (96%).

Table 1. Demography of research subject.

Category	Group	Number of subject
Gender	Men	76
	Women	225
Types of school	Special school	71
	Inclusion school	230
Level of education being taught	Elementary school	154
	Junior high school	125
	High school	22
Employment status	Civil servant	37

Category	Group	Number of subject
	Non-civil servant	264
Age	<25	53
	25-35	153
	35-45	48
	>45	47
Education background	High school	5
	Diploma	6
	Bachelor degree	289
	Master degree	1
Teaching experience	<1 year	42
	1-2 years	50
	3-5 years	84
	>5 years	118
	N/A	7
Training participation	Never	77
	1 time	51
	2 times	44
	3 times	23
	>3 times	102
	N/A	4

2.2 Materials

2.2.1 Teacher self-efficacy scale

Teachers' Sense of Efficacy Scale (TSES) Teacher self-efficacy is the teacher's belief and assessment of his or her ability to realize the expected results from student involvement and the learning process in the classroom, including when faced with students with learning obstacles or who have low learning motivation. Furthermore, teacher self-efficacy contributes to teacher behavior in the classroom.

The teacher's efficacy will influence the efforts the teacher makes in teaching, the goals to be achieved as well as aspirations and enthusiasm in teaching (Allinder, 1994; Tschannen-Moran & Hoy, 2001). In recent years, the concept of teacher self-efficacy or what is called *teachers' efficacy* (TE) has received attention from researchers in various countries (Maulana et al., 2020). The roots of the concept of teacher self-efficacy come from the social cognition theory coined by Bandura (1994). Furthermore, the TE concept was developed by Maddux and Lewis (1994) which was continued by Soodak and Poddel (1996) who emphasized the link between the TE concept and social cognition theory in the context of internal span of control or *internal locus of control.* The context of internal span of control explains that basically individuals have sufficient cognitive capacity to reflect and develop themselves in order to adapt to the social environment. This ability is also based on the awareness that individuals have full control over their behavior.

The Teacher's Sense of Efficacy Scale in short format consists of 12 items representing three main dimensions, namely student engagement, instructional strategies and classroom management. The student engagement dimension describes the teacher's task in increasing student involvement in school activities. Furthermore, the instructional strategies dimension describes the teacher's task in implementing effective teaching strategies. The classroom management dimension describes the teacher's duties in managing the classroom. Research participants were faced with several statements and asked to choose one of several responses provided according to the participant's condition. The responses given were 5 (very capable) to 1 (very unable). Table 1. Teacher's Sense of Efficacy Scale (short form) Aspect Item Number Total AItem Efficacy in Classroom Management 1,6,7,8 4 Efficacy in Student Engagement 2,3,4,11 4 Efficacy in Instructional Strategies 5,9,10,12 4 Total item 12 No Item Aspect

1. How able are you to control the disruptive behavior of students in *the Efficacy in Classroom Management class*
2. How able are you to motivate students who show little interest in school work? Efficacy in Student

Engagement
3. How able are you to make students believe that they can do their schoolwork well? *Efficacy in Student Engagement*
4. How able are you to help students appreciate the learning process? *Efficacy in Student Engagement*
5. To what extent can you formulate good questions for your students? *Efficacy in Instructional Strategies*
6. How able are you to get students to follow class rules? *Efficacy in Classroom Management*
7. How able are you to calm disruptive or noisy students? *Efficacy in Classroom Management*
8. How capable are you of building a classroom management system with each group of students? *Efficacy in Classroom Management*
9. How capable are you of using varied assessment strategies? *Efficacy in Instructional Strategies*
10. To what extent can you provide alternative explanations or examples when students are confused? *Efficacy in Instructional Strategies*
11. How capable are you of helping families so that their children can do well in school? *Efficacy in Student Engagement*
12. How capable are you in implementing alternative strategies in your class? *Efficacy in Instructional Strategies* Procedures for Adapting Measuring Tools

Next, a validation test was carried out using *Confirmatory Factor Analysis* (CFA). Masaki, (2010) CFA is used to test existing theories. Apart from that, Umar and Nisa (2020) explained that CFA can be used to test (confirm) the extent to which all items of a measuring instrument can measure or provide information related to what is to be measured. in the CFA analysis the model is declared *fit* if it meets several requirements, including (a) RMSEA value <0.08; (b) the model is considered adequate if it has a goodness of fit index, namely a CFI/TLI/RNI value of 0.90 or more; (C) shows the average value of the standardized residual between the observed and predicted covariance, namely the SRMR value must be <0.10 (Masaki, 2010).

2.2.2 Grit Scale

Grit measuring tool developed by Baraquia (2020) is called *the Teachers Grit Scale* (TGS). This measuring tool was developed based on *grit theory* according to Duckworth et al., (2007). This measuring tool is intended to help teachers improve their perspective and attitudes as well as overall teacher performance. TGS consists of 14 items which reveal two aspects, namely *persistence in teaching* and *passion and purpose in teaching*. The perseverance aspect *in teaching* emphasizes the teacher's effort, energy and enthusiasm even though they face difficulties while carrying out their profession. This aspect shows the teacher's determination, mental toughness and calmness in facing the demands of the job. Teachers with a high level of *grit* will face teaching challenges by trying to give their best and maintaining a positive mindset. Furthermore, the aspect of *passion and purpose in teaching* is a manifestation of the joy and enjoyment that teachers feel in teaching. This aspect includes satisfaction in the teaching profession and a sense of purpose in serving students (Baraquia, 2020).

2.2.3 Teaching experience scale

Measurement of the teaching experience variable by showing the teacher's entire years of teaching in accompanying SPECIAL NEEDS CHILDREN learning at school. This study displays measurements of the length of time in the teaching profession in the classroom which is divided into eight categories, namely < 1 year, 1-2 years, 3-5 years, > 5 years, < 25 years, 26-35 years, 36-45 years, > 45 years old.

2.2.4 Training participation scale

The measurement of the training participation variable is shown by teachers filling in training participation experiences throughout their teaching experience which are divided into five categories, namely never, once, twice, three times, and more than three times.

2.3 Data Analysis

This research used path analysis techniques with the help of the JASP (Jeffreys' Amazing Statistics Program). Data analysis for the validity and reliability of measuring instruments uses SEM (Structural Equation Modeling).

3 Results

3.1 Validity and Reliability Test

In this study, validity and reliability testing was carried out on two scales, namely self-efficacy and grit.

3.1.1 Validity and reliability test results for teacher efficacy

The self-efficacy of teachers for children with special needs in this study was measured using an adapted external measuring instrument. The process of adapting and translating the English version of the *Teaching Self Efficacy* measuring tool to the Indonesian version went through several stages. The first stage is that the measuring instruments are translated into Indonesian and then the results of the translation are discussed again to determine the synthesis results. The next stage, the synthesis results are translated back into English. All translation results are then discussed by experts to analyze the equality between English and Indonesian items. The items that have been translated can then be tested on research participants, namely teachers in special schools and inclusive schools.

After obtaining a *fit* model , the next step the researcher took was to test the significance of each item on each factor. The results of *the factor loading* values show that all items are declared significant (≥0.3). A items E6, E7, E8, E1 from the *Classroom Management* dimension have *factor loading values* ranging from 0.242 to 0.401. Then items E2, E4, E11, E3 from the Student Engagement dimension have *factor* loading values *ranging* from 0.283 to 0.387 . Meanwhile, a item E5, E9, E12, E10 of the dimensions *Instructional Strategies* has *a factor loading* value ranging from 0.271 to 0.397. This value means that the items and dimensions have good validity. This means that the findings of this research show that all items are valid and can be used to measure the *efficacy construct*.

Table 2 explains the results of *the Teacher Efficacy* reliability test with *Cronbach's alpha,* which obtained a value of 0.900, indicating that this measuring instrument has a good reliability value. This is based on Periantalo (2015) that reliability can be said to be quite satisfactory if *the Cronbach's* value ≥ 0.7.

Table 2. Reliability of the Teacher Efficacy.

Estimate	Cronbach's
Estimation point	0.900

3.1.2 Validity and reliability test results for grit

Grit in this study was measured using an adapted external measuring instrument. The process of adapting and translating the English version of *the Teacher Grit Scale (TGS)* measuring instrument to the Indonesian version went through several stages. The first stage is that the measuring instrument is translated into Indonesian and then the results of the translation are discussed again to determine the synthesis results. The next stage, the synthesis results are translated back into English. All translation results are then discussed by experts to analyze the equality between English and Indonesian items. The translated items were then tested on research participants, namely teachers in special schools and inclusive schools.

Table 3 explains the results of *the Teacher Grit Scale* (TGS) reliability test with *a Cronbach's alpha value* of 0.903, indicating that this measuring instrument has a good reliability value or in other words *the Teacher Grit Scale* (TGS) can be said to be consistent. This is based on Periantalo (2015) that reliability can be said to be quite satisfactory if *the Cronbach's* value ≥ 0.7.

Table 3. Reliability of the Teacher Grit Scale.

Estimate	Cronbach's
Estimation point	0.903

3.2 Inferential analysis

Correlation analysis shows that all variables involved in the research have significant correlations with different magnitudes. Overall, all variables have a positive correlation direction.

Table 4. Correlation between variables.

Variables		1	2	3	4
1. Grit	*Pearson's r*	—			

Variables			1	2	3	4
		p-value	—			
		Spearman's rho	—			
		p-value	—			
2. Efficacy		*Pearson's r*	0.519 ***	—		
		p-value	< .001	—		
		Spearman's rho	0.524 ***	—		
		p-value	< .001	—		
3. Teaching experience		*Pearson's r*	0.273 ***	0.209 ***	—	
		p-value	< .001	< .001	—	
		Spearman's rho	0.264 ***	0.251 ***	—	
		p-value	< .001	< .001	—	
4. Take part in training		*Pearson's r*	0.172 **	0.141 *	0.290 ***	—
		p-value	0.003	0.015	< .001	—
		Spearman's rho	0.157 **	0.138 *	0.288 ***	—
		p-value	0.007	0.017	< .001	—

* p < .05, ** p < .01, *** p < .001

3.3 Path Coefficients

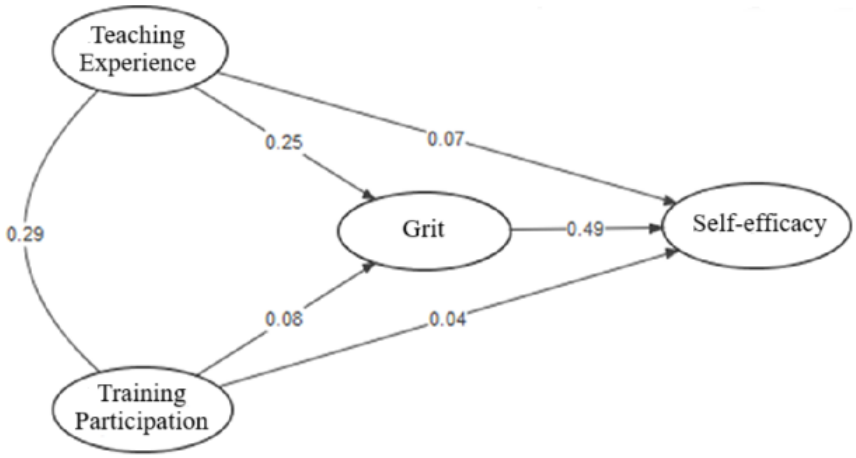

Fig. 2. Path Coefficients

3.3.1 Total effect

Overall, the influence of the teaching experience variable on efficacy through grit is known to have a value of β= .194. (p= .001). Likewise, the influence of the training participation variable on efficacy through grit is 0.077.

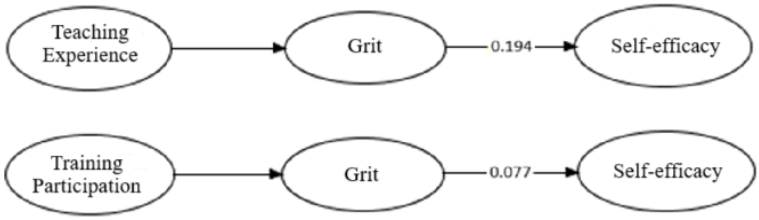

Fig. 3. Total effect

3.3.2 Direct effect

The main hypothesis to be proposed is that there is an influence of teaching experience and training participation on self-efficacy through grit. This path analysis is carried out by displaying *standardized estimate values,* handling empty data by *excluding cases listwise* with *a generalized least squares estimator.*

Directly, there is an influence of the teaching experience variable on *efficacy* , as well as the influence of the training variable on *efficacy.*

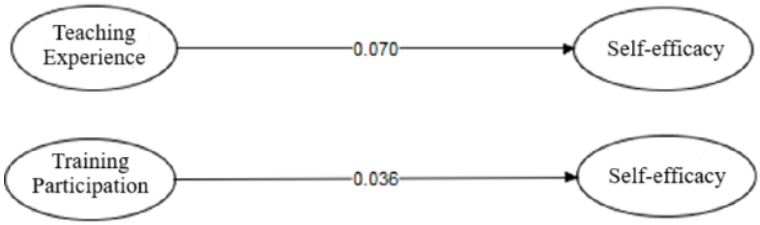

Fig. 4. Direct effect

3.3.3 Indirect effect

Indirectly, the influence of the teaching experience variable on efficacy through grit is known to have a value of β = .124 with p = <0.01.

Meanwhile, the influence of the training participation variable on efficacy through grit is meaningless because it is not significant (p= .159).

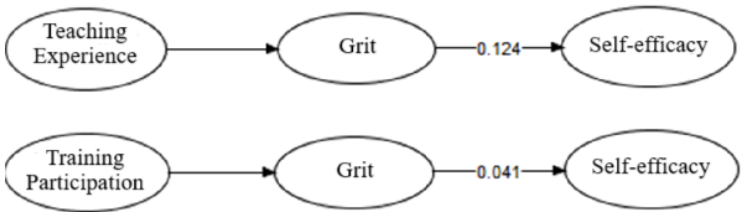

Fig. 5. Indirect effect

3.4 Hypothesis testing

3.4.1 Major hypothesis

There is an influence of teaching experience and training participation through *grit mediators* on the self-efficacy of teachers for children with special needs. Based on data analysis with *path analysis,* the major hypothesis is proven.

3.4.2 Minor hypothesis

Table 5. Regression value for each variable.

Model	R	R2	Percentage	F	p	Information
H_2	0.519	0.269	27%	110,248	<.001	significant
H_3	0.209	0.044	4%	13,286	<.001	significant
H_4	0.141	0.020	2%	6,016	0.015	significant
H_5	0.273	0.074	7%	23,443	<.001	significant
H_6	0.172	0.030	3%	9,028	0.003	significant

1. Minor Hypothesis 1
   There is a significant positive influence *of grit* on teacher self-efficacy based on the data analysis carried out, this hypothesis is proven. The contribution of *grit* to self-efficacy is 27%.
2. Minor Hypothesis 2
   There is a significant positive influence of teaching experience on teacher self-efficacy. Based on the data analysis carried out, this hypothesis was proven. The contribution of teaching experience to self-efficacy is 4%.
3. Minor Hypothesis 3
   There is a significant positive effect of training participation on teacher self-efficacy. Based on the data analysis carried out, this hypothesis was proven. The contribution of teaching participation to self-efficacy is 2%.
4. Minor Hypothesis 4
   There is a significant positive influence of teaching experience on *grit* . Based on the data analysis carried out, this hypothesis was proven. The contribution of teaching experience to *grit* is 7%.
5. Minor Hypothesis 5
   There is a significant positive effect of training participation on *grit* . Based on the data analysis carried out, this hypothesis was proven. The contribution of training participation to *grit* is 3%.
6. Minor Hypothesis 6
   There is a significant positive correlation between teaching experience and training participation. Based on the data analysis carried out, this hypothesis was proven

4 Discussion

This research proves the hypothesis that teaching experience and training participation convincingly influence self-efficacy as a mediator *of grit in* teacher for children with special needs. These results are in line with several previous studies which tested the correlation of several variables - the same research variables, although separately.

Grit has been shown to have a significant correlation with self-efficacy. Teacher for children with special needs are always faced with various difficulties in dealing with their students. *Grit* shows persistence in overcoming challenges over time, so that if teacher for children with special needs have high *grit , their self-confidence in teaching will also be high.*

The contribution of *grit* to the self-efficacy of teacher for children with special needs was found to be 27%, and is a large correlation and contribution to self-efficacy compared to teaching experience variables, and training participation has a close psychological concept. Teacher for children with special needs who have good *grit are characterized as teachers who are ready for all challenges, have a goal or goal orientation* and a strong *passion for work so that they will increase their self-efficacy.*

The contribution of *grit* to self-efficacy is much higher than teaching experience and training participation, indicating that the two variables that have been believed to be able to increase self-efficacy are apparently not enough. *Grit* can be a good mediation in this endeavor. This is reinforced by the correlation between the two and *grit*. Teaching experience and participation in actual training also increase *grit*.

Teaching experience of teacher for children with special needs is an objective indicator of the time teachers spend interacting with their students. Prolonged interaction will certainly provide a high level of understanding and concern for students, so that there will be a motivation to be dedicated and increase concentration in achieving their duties as a special needs teacher. Besides, as time goes by, teachers will face a more diverse challenges and obstacles. There are times when teachers succeed in overcoming obstacles, other times they fail. Teachers will need to work hard to find the best solution, until finally the they remains with their profession.

Training for teacher for children with special needs provides insight and knowledge about the conditions of children with special needs and the learning processes they experience. Through training, teachers are expected to be more skilled in dealing with children with special needs. Attending training will increase the teacher's interest and consistency in finding solutions to the problems they face, as well as train their perseverance in trying to put it into practice.

The results of this study strengthen the importance of *grit* on self-efficacy of teacher for children with special needs. The large contribution of *grit* to self-efficacy shows that it is very important to cultivate *grit* in teacher for children with special needs. In other words, teacher for children with special needs are required to have high self-efficacy, then cultivating and increasing *grit* is one of the important efforts that must be made. Teaching experience and training participation are also proven to have an influence, although the contribution is not as much as *grit*.

The implications of this research are input for all interested stakeholders regarding the importance of self-efficacy for teacher for children with special needs. *Grit* can be included as a *hidden curriculum* in training programs provided for teacher for children with special needs. The stakeholders such as the education authorities and school management has to take role in designing the system by adding *grit* as mediator to enhance teacher’s motivation and resilience. This can be done in the form of giving assignments that have tiered difficulties, involving teachers in school programs that are relevant to the problems of children with special needs, and providing motivating appreciation for the efforts that have been made.

5 Conclusion

This research found the dynamics of the relationship between psychological and non-psychological factors on self-efficacy in teacher for children with special needs. Teaching experience and training participation are non-psychological factors and grit is a psychological factor. All have been proven to have a significant influence on the self-efficacy of teacher for children with special needs. Further implications of these results are as follows:

1. Teacher for children with special needs is influenced by *grit* with a contribution of 27%. This shows the importance of teachers having *grit* so that their self-efficacy can be improved.
2. *Grit* is a good mediator of non-psychological factors so that the self-efficacy of teacher for children with special needs becomes more optimal.
3. Teaching experience plays a role in increasing the self-efficacy of teacher for children with special needs. Teacher for children with special needs are advised to have high motivation in carrying out their roles professionally and be willing to persist for a long time. Apart from teachers, the involvement of other stakeholders also play a role. How do systems in schools and related education

stakeholders choose programs that guarantee teacher resilience in carrying out their profession?

Participation in training plays a role in the high and low levels of self-efficacy of teacher for children with special needs. Nonetheless, it was found in this research that without *grit* this role could be meaningless. Thus, it is recommended that training programs for teacher for children with special needs to include elements *of grit* in them.

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