



European Journal of Educational Research


Volume 13, Issue 1, 397 - 411.

ISSN: 2165-8714

<http://www.eu-jer.com/>

Self-Directed Learning Readiness Model: A Mediating Role of Self-Efficacy among Need-Supportive Teaching Style, Transformational Parenting and Emotional Intelligence

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Received: May 5, 2023 • Revised: August 2, 2023 • Accepted: August 31, 2023

Abstract: The study aimed to explore the self-directed learning readiness model and its relationship with various factors such as emotional intelligence, transformational parenting, need-supportive teaching style, and self-efficacy as potential mediators. The research was conducted with 415 junior high school students in Surabaya, Indonesia. To ensure the reliability and validity of the instruments used in the study, confirmatory factor analysis was performed. The loading factor values of all the items in the instruments were found to be greater than .50 indicating a satisfactory level of validity. Additionally, the reliability coefficient of all the instruments exceeded .90 demonstrating good internal consistency. Analysis using structural equation modeling (SEM) demonstrated that the theoretical model of self-directed learning readiness was consistent with empirical conditions because it meets the standard value of goodness of fit. Furthermore, through the indirect effect tests, it was discovered that need-supportive teaching style, emotional intelligence, and transformational parenting significantly influenced self-directed learning readiness, with self-efficacy acting as a mediator. Among the factors examined, self-efficacy was found to have the greatest impact in explaining readiness for self-directed learning readiness.

Keywords: *Emotional intelligence, need-supportive teaching style, self-directed learning readiness, self-efficacy, transformational parenting.*

To cite this article: Prihastiwi, W. J., Wiyono, B. B., Chusniyah, T., & Eva, N. (2024). Self-directed learning readiness model: A mediating role of self-efficacy among need-supportive teaching style, transformational parenting and emotional intelligence. *European Journal of Educational Research*, 13(1), 397-411. <https://doi.org/10.12973/eu-jer.13.1.397>

Introduction

Junior high school students must be prepared for self-directed learning readiness (SDLR), which is required for the education revolution 4.0, which is characterized by learning that can be done anytime and anywhere, individualized learning, free choice, project-based learning, field experience, and learning ownership (Fisk, 2017). Regarding Personal Responsibility Orientation (PRO), Hiemstra and Brockett (2012) proposed a self-directed learning readiness paradigm. This paradigm explains that learning responsibility is the result of the interaction between learning factors (process), student characteristics (person), and context. Another model put forward, Du Toit-Brits (2019) said that self-directed learning readiness was an interaction between student characteristics and the learning environment. Previous research findings, included Kek and Huijser (2011), who found a significant effect of student-centered learning on self-directed learning readiness; researchers Qamata-Mtshali (2013), Leary et al. (2019), and Millanzi et al. (2021) discovered a substantial relationship between problem-based learning and self-directed learning readiness. Qamata-Mtshali (2013), Leary et al. (2019); Millanzi et al. (2021), who found a significant effect of problem-based learning on self-directed learning readiness; According to Ceylaner and Karakus (2018), the Flipped Classroom model significantly improved students for self-directed learning readiness; process-based learning (Bolhuis, 2003), and Uz and Uzun (2018), who found a significant effect of blended learning on self-directed learning skills.

Research involving personal factors on SDLR includes the big five personalities (Slater et al., 2017), Personality traits (De Bruin, 2007), and according to research by Heo and Han (2018), academic stress significantly affects students' readiness for self-directed learning, self-efficacy (Kek & Huijser, 2011; Meng et al., 2019; 7; Zhang et al., 2018). Parental involvement

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is one of the family elements that affect a child's preparation for self-directed learning (Kek & Huijser, 2011); democratic parenting care and training (Paiwithayasiritham, 2013); family environment (Ramli et al., 2018); and psychological control by the mother (Lee & Kwon, 2012). Several findings of the above research show the partial influence of various independent variables on self-directed learning readiness.

Vestad et al. (2021) stated that students experience various emotions during learning, like enjoyment in learning, anxiety, fear, rage, shame, and boredom, and Bakken et al. (as cited in Vestad et al., 2021) said that school is a major source of stress. D'Mello and Graesser (2012), each of them significantly influences student engagement and learning results, as well as unpleasant emotions that can affect the level of student functioning (Vestad et al., 2021). According to Fredrickson's (2001) broaden and build theory, positive emotions such as joy and pride can increase the range of personal awareness and activity in learning. Therefore, in order to experience pleasant emotions, pupils must be able to control their negative emotions.

Therefore, students must have the ability to manage negative emotions to obtain positive emotions. The ability to manage emotions is called emotional intelligence. Since self-directed learning readiness is an intrinsic motivation that is tightly linked to good emotions, emotional intelligence plays a crucial part in this process. The impact of emotional intelligence on self-directed learning readiness has been demonstrated in numerous studies (Koç, 2019; Zhoc et al., 2018). According to Matthews' research (Matthews, 2012), emotional intelligence and self-efficacy are significantly correlated.

The various empirical models of self-directed learning readiness above still have gaps that have not been studied, namely transformational parenting, where this parenting is able to guide children to become autonomous individuals and able to build efficacy of regulation (Morton et al., 2011). Likewise, the role of teaching style has not been disclosed in previous studies. Hiemstra and Brockett (2012) suggest that teaching style is a factor that influences self-directed learning. Ryan and Deci (2017) suggest that every student has a desire for relatedness, competence, and autonomy. The need-supportive teaching style notion was built on the foundation of this idea. When students' needs for competency are met, enthusiasm and motivation can be built. In addition, this need-supportive teaching style emphasizes providing informative, constructive feedback and guiding students to find the relevance of learning, which would shape the meaning of learning, and also their academic self-concept.

According to the summary above, this study closes a research gap: the self-directed learning readiness theoretical model has not yet been found, which relates to various variables that originate from the internal students: emotional intelligence and self-efficacy, as well as external variables: transformational education and need-supportive teaching style. These variables are assumed to play a significant role in improving self-directed learning readiness in junior high school students. Although there have been many studies that self-efficacy has been shown to correlate significantly with self-directed learning readiness but is still partial then this research sheds light on the function of self-efficacy as a mediator between transformational parenting, need-supportive teaching methods, and emotional intelligence in self-directed learning readiness. In order to empirically support the self-directed learning readiness model in junior high school students, this article employs structural equation modeling (SEM), which reveals the role of self-efficacy as a mediator between the effects of emotional intelligence, a need-supportive teaching style, and transformational parenting on self-directed learning readiness.

Literature Review

Self-Directed Learning Readiness.

The concept of self-directed learning was introduced in adult education by Houle (1961), Tough (1967, 1971). In 1997, Knowles began to formalize the term self-directed learning (Linder, 2013). In various kinds of literature, the terms self-directed learning, self-directed learning, self-planned learning, self-teaching, independent study, and self-regulation in learning are often understood as the same concept and are used interchangeably (Loyens et al., 2008). Independent learning, autonomous learning, and self-directed learning are seen as synonymous concepts (Livingston, 2012), whereas Knowles (1975) views self-directed learning as different from independent learning.

According to Knowles (1975) and Donaghy (2005), self-directed learning is described as a process where individuals take the initiative to diagnose their own learning needs, set learning objectives, identify the necessary resources, choose and implement suitable learning strategies, and evaluate the outcomes of their learning, all without relying on external assistance. Furthermore, Guglielmino (1978) developed a self-directed learning readiness scale. Wiley (1983) defines self-directed learning readiness as the level of attitude, ability, and personal characteristics needed for independent learning.

As self directed learning has developed, different perspectives have emerged. Hiemstra and Brockett (2012), Candy (1991), Garrison (1992), and Gibbons (2002) further describe self directed learning as a process. Merriam and Bierema (2013); Hiemstra and Brockett (2012); Kirwan et al. (2014) suggested that self-directed learning can be seen as a personal attribute. Song and Hill (2007); Grow (1991); Merriam and Bierema (2013); Fisher and King (2010) define self-directed learning as a teaching method, that determines the level of student responsibility for their own learning. In this study refers to the perspective of self-directed learning as personality.

Self-directed learning readiness is a personality attribute that is formed through a process that is influenced by many factors. Numerous professionals have created models to understand the variable interactions that impact self-directed learning. Nnaemeka et al. (2018) divided the models into the Linear Model and the Interactive Model. According to the linear model, the student moves through a series of steps to achieve learning goals independently (Knowles, 1975; Tough, 1979). Interactive model developed by Brockett and Hiemstra (1991), which is famous for its Personal Responsibility Orientation (PRO) model. Hiemstra and Brockett (2012) improved the PRO model by incorporating context components into the model so that there are three aspects: Person, Process, and Context (PPC). Du Toit-Brits (2018) describes a model called transformative and holistic continuing self-directed learning theory. This theory explains how the interaction between factors characteristic of students, the teaching and learning environment, either directly or indirectly mediated by the meaning of learning, will influence self directed learning readiness.

Research involving elementary school students was conducted by Nor and Saeednia (2008) with the aim of adapting the self directed learning readiness instrument. Another study was conducted by Alwadaeen and Piller (2022) on strategies for enhancing self-directed learning readiness in elementary students in American schools. Research results reported by Lee and Kwon (2012) show students in Korea reach a high level of self-directed learning readiness at a rate of only about 10.5% in elementary school 6th grade students, 7% in junior high school students 3rd grade students, and 6% in high school students. In general, the data show that almost 90% of students at all levels of primary education have low self-directed learning readiness. Furthermore, Lee and Kwon showed in the results of their research that there was a significant negative influence of parenting that emphasized the psychological control of mothers over self-directed learning in Korean junior high school students. Another study on junior high school students reported by Gooria et al. (2021) revealed that mastery of self-directed learning skills is not gender biased and does not depend on student learning performance, but was found to be significantly dependent on the level of computer skills, thus stating that students who are proficient in using computational tools were well-poised to embrace self-directed learning. There are still very few studies of self-directed learning readiness on junior high school students that encourage this research.

Need-Supportive Teaching Style

In the development of self-directed learning readiness, the role of the teacher and the learning process are crucial factors. Hiemstra and Brockett (2012) highlight the influence of a teacher's teaching style on self-directed learning readiness. According to the self-determination theory proposed by Ryan and Deci (2017), individuals have fundamental psychological needs, including the need for relatedness, autonomy, and competence. When these needs are fulfilled, it can support students in developing intrinsic motivation. Numerous studies have demonstrated a strong correlation between the satisfaction of psychological needs and the eudaimonic well-being index. This index measures the extent to which a person experiences meaning, self-realization, and optimal functioning (Legault et al., 2017).

The teaching style of a teacher that supports the three fundamental psychological needs of students is referred to as a need-supportive teaching style (Aelterman et al., 2014). Stroet et al. (2013) and Kaplan (2018) put forward a teaching style that supports the need for autonomy where the teacher gives a choice of tasks that are considered less attractive or unimportant to very interesting or very important; nurturing inner resources, teaching fosters relevance by identifying the value of assignments, lessons, or behaviors, and teachers show respect, allow criticism, and use it as information. Reeve et al. (2020) argue that meeting the need for autonomy will foster initiative and a sense of self as an agent.

A teaching style that supports meeting the competency needs of students involves the teacher providing clear, easy-to-understand, and detailed instructions, as well as effectively organizing future lessons. In this teaching style, the teacher acts as a facilitator, guiding students through ongoing activities. By meeting the competency needs of students, they will feel a greater sense of control over their academic outcomes. Teachers can encourage students by communicating positive expectations about their schoolwork and providing constructive feedback, thus helping them gain control over valuable outcomes (Stroet et al., 2013).

When external environmental conditions facilitate the fulfillment of students' needs for autonomy and competence, their intrinsic motivation increases (Ryan & Deci, 2017). Deci and Ryan further argues that the fulfillment of these needs for autonomy and competence serves as a strong predictor of student resources (Pitzer & Skinner, 2017; Reyes et al., 2012). Su and Reeve (2011) suggest that the role of the teacher's teaching style in supporting the fulfillment of students' basic needs is a crucial factor in fostering students' perceptions of competence, independence, and achievement.

By adopting a teaching style that supports students' competency needs, educators can create an empowering learning environment that enhances students' motivation, engagement, and overall academic success.

Transformational Parenting

Transformational parenting is a parenting approach derived from the principles of transformational leadership. The idea of transformational leadership was initially introduced by Burns in 1978. Furthermore, Popper and Mayseless (2003) argue that good parents are good leaders who display transformational behavior, namely showing sensitivity and responsibility through individual considerations; being accepting and non-judgmental of children, providing opportunities through significant experiences; establishing flexible rules and boundaries; and providing positive

examples that can be used to identify children (Álvarez et al., 2019). Parents as authority figures, must increase their child's autonomy through empowering relationships (Popper & Maysseless, 2003; Rodrigo Lopez, 2016). The style of transformational parenting has the potential to fulfill the requirements of empowerment and autonomy support (Popper & Maysseless, 2003). Empirical evidence from Morton et al. (2011) further supports this notion, showing that parents who engage in transformational parenting behaviors effectively enhance their children's self-regulatory efficacy.

Various studies have shown that transformational style has been found to consistently predict increased levels of self-efficacy (Kark et al., 2003) and psychological well-being (Arnold et al., 2007). The research results of Morton et al. (2011) found that transformational parenting style has a significant effect on self-regulatory efficacy, namely an individual's assessment of his ability to regulate himself effectively.

Transformational parenting styles have been shown to enhance children's self-efficacy beliefs through various means. According to Morton et al. (2011), parents with a transformational parenting style communicate higher standards for academic performance to their children, show confidence in the child's ability to meet those standards, and place an emphasis on empowerment rather than control. Additionally, Avolio (2004) suggests that transformational parenting creates an environment that inspires children to learn, encourages independent thinking, fosters greater self-awareness, and promotes improved self-regulation skills. In addition, transformational parenting creates conditions in which children are inspired to learn, encouraged to think for themselves, show greater self-awareness, and demonstrate increased self-regulation. Based on the characteristics of transformational parenting, it can be a source of efficacy because parents can provide feedback and mastery experiences through relationships that empower and, at the same time, should be expected to influence children's readiness for independent learning.

Self-Efficacy

In addition to external environmental factors that affect self-directed learning readiness, internal factors also have an effect. Bandura (2001) views humans as agents. The most important aspect of humans as agents is self-efficacy. Self-efficacy refers to an individual's belief in his ability to achieve the desired results, to learn, and to influence the choice of activities and the effort expended (Zimmerman, 2000). Bandura believes that students' perceptions of self-efficacy influence their learning behavior and intentions to learn. Furthermore, it is said that students' perceptions of self-confidence will create an intrinsically reinforcing environment, where students who have high self-efficacy will try to learn more and last longer on a task than students who have low self-efficacy (Hergenhahn & Olson, 1997). Self-efficacy beliefs will also influence the way of thinking, whether the way of thinking is erratic or systematic, optimistic or pessimistic (Schunk & Pajares, 2002). Thus, it can be assumed that self-efficacy will influence the extent to which students can take responsibility, motivate themselves to learn so they enjoy learning, and foster initiative for learning. As stated by Bandura above, self-efficacy is a motivational belief.

Emotional Intelligence

The learning process does not only involve cognitive factors but also affective factors in this case emotions. Almost every part of the teaching and learning process involves emotions, in some way (Schutz & Lanehart, 2002). Dweck (1986) and Götz et al. (2003) argue that students' emotions play an important role in social relations in learning, goal orientation, motivation, and self-concept. The findings of the study by Zhoc et al. (2018) revealed a connection between emotional intelligence and all aspects of student engagement. Based on the opinions of these experts, emotions are a significant factor in learners' preparation for self-directed learning readiness.

Pekrun et al. (2002) explain that positive emotions can expand an individual's awareness and actions, facilitate the formation of goals and facing challenges, and promote positive thinking. Positive emotions in an academic context can encourage individuals to actively pursue learning opportunities and utilize available resources, leading to enhanced abilities and increased effort. Reschly et al. (2008) found that positive academic emotions can create a sense of engagement and involvement in the learning process among students. The emotional state of an individual can also impact their self-efficacy and ability to evaluate their capabilities and determine appropriate actions to be taken. When in a negative emotional state, individuals are not able to exercise self-efficacy properly. This is supported by the opinion of Gundlach et al. (2003) that the mental process of self-efficacy can be influenced by emotions. Uncontrolled emotions interfere with cognitive information processing and can further impair task performance. This opinion refers to the opinion of Bandura (2001) that physiological and emotional conditions are predictors of self-efficacy abilities.

Students often experience negative emotions that originate either at home or at school. Therefore, emotional intelligence plays an important role in the management of negative emotions. Students who possess emotional intelligence experience positive emotions, and these conditions have a significant impact on their readiness for self-directed learning and self-efficacy. Emotional intelligence involves the capacity to effectively manage negative emotions and motivate oneself to maintain emotional equilibrium. Mayer et al. (2004) define emotional intelligence as an individual's ability to handle emotions. This definition suggests that emotional intelligence is a component of social intelligence, encompassing the ability to perceive and differentiate between one's own emotions and the emotions of others and to utilize this information to guide one's thoughts and behaviors (Matthews, 2012).

Numerous studies have provided evidence for the impact of emotional intelligence on self-directed learning readiness and self-efficacy (Koç, 2019; Matthews, 2012; Zhoc et al., 2018). Emotional intelligence shows a significant correlation with self-efficacy (Ngui & Lay, 2020).

Based on the theoretical explanation above, it can be seen that the importance of transformational parenting and need-supportive teaching style is included in the theoretical model of self-directed learning readiness for junior high school students because the role of parents is reflected in parenting and teaching style which has a very large role in the formation of students' self-directed learning readiness junior high school student. Parenting and teaching styles are sources of self-efficacy. Self-efficacy, which is also a motivational belief, has an important role in motivating students to take responsibility for learning, having the initiative to learn on their own and enjoying learning. Likewise, emotional intelligence has an influence on self-directed learning readiness. This is because the emotional aspect is very influential on learning behavior. When students have the ability to manage negative emotions and can have emotional balance, students are able to take responsibility for learning, have the initiative to learn and love learning. The summary of the explanation above is outlined in the conceptual framework below, as well as the hypotheses that will be tested in this study: An effect of a supportive need teaching style on self-directed learning readiness with self-efficacy as a mediator; an effect of transformational parenting on self-directed learning readiness with self-efficacy as a mediator; an effect of emotional intelligence on self-directed learning readiness with self-efficacy as a mediator.

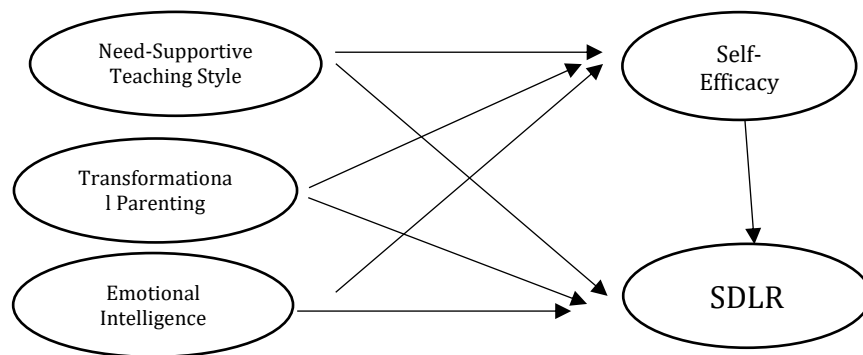


Figure 1. Conceptual Framework

Methodology

Research Design

The objective of this research was to create a model that assesses the self-directed learning readiness of junior high school students. Additionally, it aimed to determine the influence of a mediator, specifically self-efficacy, in the relationship between exogenous variables on endogenous variables. To achieve these objectives, the design of this study used a quantitative approach, namely research that measures variables and calculates them using statistics (Neuman, 2009). Variables were measured using a self-reported scale, specifically transformational parenting style variables and teaching styles that support needs measured from participants' perceptions.

Sample and Data Collection

This study involved 478 junior high school students in Surabaya, Indonesia. After the outlier analysis was carried out, it was found that 65 data were outliers and had to be removed so that the final sample size was 415 students. 55.939% of male participants and 45.060% of female participants. This number of samples had met the minimum limit determined by the SEM model.

In this study, all measurement instruments were adjusted to suit the cultural context of the research participants. The adaptation process for these instruments followed the six stages outlined by Beaton et al. (2000). These stages include forward translation, synthesis of forward translation, backward translation, synthesis of backward translation, and expert review.

Confirmatory factor analysis (CFA) using LISREL 9.20 was employed to assess the construct validity in this study. The study assessed the suitability of the measurement model by comparing the obtained data values with the criterion reference values. These criterion reference values included the Chi-square value (χ^2) or the Chi-square probability value with a significance level below .05 (α ; df), RMSEA less than .08, GFI higher than .90, AGFI higher than .90 and CFI higher than .90. The confirmatory factor analysis results for all the instruments used in the study met the specified cut-off criteria for goodness of fit, as presented in Table 1.

Table 1. CFA Analysis Results for All Instruments

Variable	Chi-square (χ^2)	p	RMSEA	GFI	AGFI	CFI
SDLR	291.95	.00	0.058	0.91	0.88	0.97
SE	75.40	.00	0.069	0.94	0.91	0.96
NSTS	291.58	.00	0.078	0.91	0.88	0.95
TP	262.65	.00	0.077	0.91	0.87	0.95
EI	215.82	.00	0.069	0.92	0.88	0.95

The validity test, conducted using the CFA method, yielded factor loading values for each item on all the measurement instruments. These factor loading values indicate the strength of the relationship between each item and its corresponding latent construct. The item is said to be valid if the factor loading is equal to or above .50. Hair et al. (2009) suggest that the lower limit of an acceptable loading factor is .50. The validity test conducted using the CFA method yielded the following factor loading values for each measurement instrument described below:

a. Self-Directed Learning Readiness

The Modified Self-Directed Learning Readiness Scale (MSDLR), a variation of the original Self-Directed Learning Readiness Scale instrument (Guglielmino, 1978), was utilized in this study, which was carried out by Nor and Saeednia (2008). This instrument consists of 20 items from 7 factors, namely: Openness, self-concept as an effective learner, initiative, and independence in learning, acceptance of responsibility for independent learning, love of learning, creativity, and future-oriented.

The loading factor values for all items of the self-directed learning readiness instrument ranged from .56 to .86 in the first-order analysis. These values indicate the strength of the relationship between each item and the latent construct of self-directed learning readiness.

In the second-order analysis, the loading factor values ranged from .56 to .94. These values represent the strength of the relationship between the higher-order latent construct and the observed variables at the first-order level. The highest loading factor of .94 suggests a strong relationship between the higher-order construct and its indicators, while the lowest loading factor of .56 indicates a comparatively weaker relationship.

The construct influence test resulted in t-statistic values ranging from 3.77 to 9.62. As the t-statistic values exceeded the critical value of 1.96, it can be concluded that the instrument is valid.

Furthermore, the reliability analysis yielded an average variance extracted (AVE) value of .50 and a Composite Reliability (CR) value of .96. These values indicate that the instrument meets the requirements for reliability.

b. Self-Efficacy

This variable was measured using the General Self-Efficacy Scale developed by Jerusalem and Schwarzer (1992). This instrument was unidimensional and consisted of 10 items. The results of the validity test with the CFA method obtained the lowest factor loading value for each item as low as .54 and as high as .86, so it can be concluded that all self-efficacy instrument items have fulfilled validity. Reliability analysis obtained an AVE value of .60 and a CR value .94 and it can be concluded that this measuring instrument meets reliability requirements.

c. Need-Supportive Teaching Style

This variable was measured using the Need-Supportive Teaching Style Scale in Physical Education (NSTSSPE) developed by Liu and Chung (2017). This instrument consists of 16 items in three dimensions: structure, involvement, and autonomy.

In the first-order analysis, the factor loading values for all items of the Need-Supportive Teaching Style instrument ranged from .51 to .89. These values indicate the strength of the relationship between each item and its respective dimension. The second-order analysis revealed factor loading values ranging from .81 to .98. These values represent the strength of the relationship between the higher-order construct (Need-Supportive Teaching Style) and its underlying dimensions. The construct influence test resulted in t-statistic values ranging from 8.84 to 11.35. As the t-statistic values exceeded the critical value of 1.96, it can be concluded that the instrument was valid. Furthermore, the reliability analysis yielded an AVE value of .60 and a Composite Reliability (CR) value of .95. These values indicate that the instrument meets the requirements for reliability.

Based on these findings, it can be concluded that all items of the need-supportive teaching style instrument are valid and that the instrument itself demonstrates sufficient reliability.

d. Transformational Parenting

This variable was measured using the Transformational Parenting Questionnaire (TPQ) developed by Morton et al. (2011). This instrument consists of 16 items from the fourth dimension, namely: idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation.

In the first-order test, the factor loading values of all transformational parenting instrument items were obtained in the range of .61 to .88, and the results of the second-order analysis showed that the factor loading values were in the range of .88 to .98. The construct effect test obtained a t-statistic test value in the range of 7.39 to 12.75. As the t-statistic values exceeded the critical value of 1.96. The analysis's findings support the validity of every transformational parenting item. The results of the reliability analysis obtained an average variance extracted of .60 and a composite reliability of .96, and it can be concluded that this instrument has fulfilled reliability requirements.

e. Emotional Intelligence

The Wang and Law Emotional Intelligence Scale (WLEIS), created by Law et al. (2004), was used to measure this variable. This questionnaire has 15 items across 4 dimensions: appraisal of one's own emotions (SEA), appraisal of others' emotions (OEA), use of emotion (UOE), and regulation of emotion (ROE).

In the first-order test, the loading factor values for all items ranged from .56 to .93. Loading factor values indicate the strength of the relationship between each item and the underlying construct being measured. When testing the effect of variables on the second-order model, the loading factor values ranged from .50 to .75. These loading factor values indicate the strength of the relationship between the latent construct of emotional intelligence and the observed variables (items) within each dimension. Furthermore, the construct effect test yielded t-statistic values ranging from 5.47 to 6.65. Since these t-statistic values are higher than the critical value of 1.96 (assuming a significance level of .05), it suggests that the relationships between the variables in the model are statistically significant. This supports the validity of the measuring instrument.

Reliability analysis was conducted, resulting in an AVE value of .70 and a Composite Reliability (CR) value of .97. Based on these findings, it can be concluded that the measuring instrument of emotional intelligence, as assessed by the WLEIS, demonstrates both validity and reliability.

Findings/Results

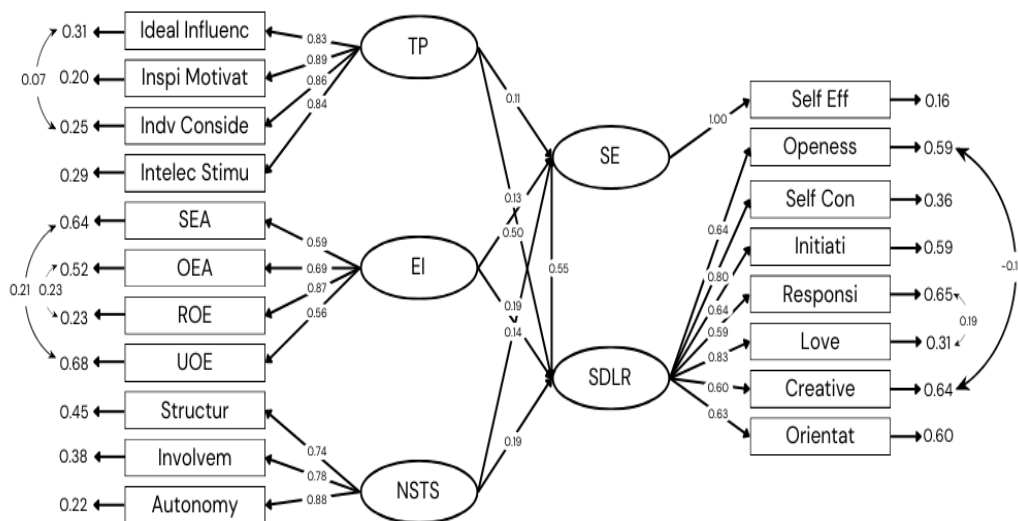
A detailed examination of the variables provided a summary of the average and variability of each variable through the calculation of the mean and standard deviation. Self-directed learning readiness (Mean = 71.422, *SD* = 7.847); Need-supportive teaching style (Mean = 54.56, *SD*=8.83); Transformation parenting (Mean = 68.26, *SD* = 9.30); Emotional intelligence (Mean= 62.15, *SD* = 9.05); Self-efficacy (Mean = 35. *SD* = 5.87).

A gender-based analysis of self-directed learning readiness revealed a notable distinction between male and female students, wherein female students displayed greater levels of self-directed learning readiness compared to their male counterparts. However, when examining self-efficacy and emotional intelligence, the analysis indicated no discernible disparity between male and female students.

Testing the suitability of the self-directed learning readiness model using structural equation modeling analysis (SEM). The analysis of the model test yielded a modified fit model, as depicted in Table 2. Model modification was carried out using a covariance approach, namely correlating covariance errors between dimensions according to Lisrel's suggestion. The self-directed learning readiness variable, correlates the dimensions of openness to creative learning, responsibility with a love of learning. The transformational parenting variable correlates the ideal effect with individual considerations. The variable of emotional intelligence correlates emotion regulation, with assessing the emotions of others and assessing one's own emotions with the use of emotions.

Table 2. Comparison of the Goodness of Fit Values for the Initial and Second SEM Models

CFA	χ^2	p	RMSEA	SRMR	CFI	GFI	AGFI
Early model	372.32	.000	0.062	0.058	0.97	0.91	0.89
Modification mode	268.84	.000	0.048	0.044	0.98	0.93	0.91



Chi - Square=275.18, df=140, P-value=0.00000, SMSEA=0.048

Figure 2. Self-Directed Learning Readiness Model Fit

Figure 2 illustrates the results of testing self-directed learning readiness against the cut-off goodness of fit. Based on these results, it can be concluded that the theoretical model aligns with the empirical conditions observed in the field.

In this study, hypothesis testing was conducted using a two-way t-test. The criteria for the test were as follows: if the absolute value of the t-statistics was greater than the critical value from the t-table, it indicated a significant relationship. Conversely, if the absolute value of a t-statistics was less than the critical value from the t-table, it suggested no significant relationship. For this analysis, the critical value from the t-table was 1.96 at a significance level of 5%.

The t-test analysis results for the direct effects of exogenous variables on endogenous variables are presented in Table 3, indicating the following:

1. The need-supportive teaching style demonstrated a significant influence on self- directed learning readiness, with a direct effect value of .19.
2. Transformational parenting displayed a significant effect on self-directed learning readiness, as evidenced by a t-statistic score of 2.37 (>1.96) and a direct effect value of 0.13.
3. Emotional intelligence exhibited a significant influence on self-directed learning readiness, with a t-statistic score of 2.57 (>1.96) and a direct effect value of .19.
4. Self-efficacy showcased a significant effect on self-directed learning readiness, supported by a t-statistic score of 5.35 >1.96) and a direct effect value of .55.

Table 3. Direct Relationship of Exogenous Variables to Endogenous Variables

No	Variable	Regress Coefficient	SE	t-statistic	Sig.
1	NSTS → SDLR	0.19	0	Fix Parameter	Significant
2	TP → SDLR	0.13	0.053	2.37	Significant
3	EI → SDLR	0.19	0.074	2.57	Significant
4	SE →SDLR	0.55	0.10	5.35	Significant
5	NSTS → SE	0.14	0.051	2.76	Significant
6	TP → SE	0.11	0.050	2.16	Significant
7	EI → SE	0.50	0	Fix Parameter	Significant

In order to determine the indirect effect of exogenous variables on endogenous variables through the mediator of self-efficacy, the Sobel formula was utilized. Sobel's analysis results are shown in table 4:

- a). The indirect effect of the need-supportive teaching style on self- directed learning readiness, mediated by self-efficacy, revealed a statistical t- value greater than 1.96. This indicates a significant influence of the need-supportive teaching style on self-directed learning readiness through the pathway of self-efficacy.

- b). The indirect effect of transformational parenting on self-directed learning readiness, mediated by self-efficacy, demonstrated a t-statistic value greater than 1.96. This indicates a significant effect of transformational parenting on self-directed learning readiness through the pathway of self-efficacy.
- c). The indirect effect of emotional intelligence on self-directed learning readiness, mediated by self-efficacy, also yielded a t-statistic value exceeding 1.96. This suggests a significant influence of emotional intelligence on self-directed learning readiness through the intermediary role of self-efficacy.

Table 4. Indirect Influence Test Results With the Sobel Formula

Hipo	Indirect Effect	Direct Effect	Regrs Coeff	SE	t-Value	Sign.
H1	NSTS → SE → SDLR	NSTS → SE SE → SDLR	0.14 0.55	0.051 0.1	2.46	Significant
H2	TP → SE → SDLR	PT → SE SE → SDLR	0.11 0.55	0.05 0.1	2.04	Significant
H3	EI → SE → SDLR	EI → SE SE → SDLR	0.50 0.55	0.00 0.1	5.50	Significant

Discussion

The results of the study indicate that the theoretical model of self-directed learning readiness for junior high school students aligns well with the observed empirical conditions in the field, as it satisfies the cut-off goodness of fit criteria. This implies that the self-directed learning readiness model can be effectively explained by the predictors of need-supportive teaching style, transformational parenting, and emotional intelligence, with self-efficacy serving as a significant mediator.

Furthermore, the study reveals that self-efficacy exerts the most substantial influence on self-directed learning readiness when compared to other variables. Additionally, the indirect effect of emotional intelligence on self-directed learning readiness through the mediating role of self-efficacy exhibits the most pronounced impact among the indirect effects of other variables.

The findings of this research on the self-directed learning readiness model are consistent with Bronfenbrenner's ecological theory (Bronfenbrenner & Morris, 2006). This theory emphasizes the influence of the family environment and school on children's overall development. The study's results provide further support for the notion that factors such as need-supportive teaching style and transformational parenting within the family environment, as well as the educational setting, play significant roles in shaping students' self-directed learning readiness. This alignment with Bronfenbrenner's ecological theory reinforces the understanding that multiple environmental contexts interact and contribute to children's growth and learning outcomes. Likewise, Bandura's (2001) cognitive social theory, with the triadic concept and the concept of humans as agents, meant that individuals could cognitively process environmental influences and then manifest them in their behavior. The 3P model (prestage, process, and product) proposed by Biggs (2003) provides an explanation of how learning outcomes are influenced by various factors originating from students and the learning process itself. In the context of this research, self-directed learning readiness is considered a quantitative learning outcome. Hiemstra and Brockett (2012) put forward the PRO theory, which specifically focuses on self-directed learning and highlights the importance of responsibility in learning as a key element. According to this theory, responsibility in learning emerges from the interaction of personal, process, and context factors (PPC model). Personal factors refer to student characteristics, process factors encompass instructional transactions, and context factors include cultural influences, among others. These ideas are supported by Du Toit-Brits (2018), who introduced the Transformative and Holistic Continuing Self-Directed Learning (THCSDL) theory, emphasizing the interaction between student characteristics and the teaching and learning environment in shaping self-directed learning readiness. The teaching and learning environment, particularly the provision of support for connectedness and autonomy, is considered a crucial element that significantly impacts students' self-directed learning readiness. Du Toit-Brits (2018) further suggests that this learning environment serves as a foundation for the development of learning ownership in students, which is a characteristic of self-directed learning readiness. Deci et al. (2013) affirm that interpersonal relationships can foster autonomous motivation and individual competency beliefs if these important figures, like teachers and parents, provide support for individual autonomy in their social context.

Need-supportive teaching style refers to a teaching approach that offers students choices regarding the tasks they can undertake. It creates a structured learning environment where tasks are tailored to match the abilities and skills of individual students. Additionally, this teaching style includes providing guidance to help students understand the relevance of the tasks in relation to their personal goals. Overall, the need-supportive teaching style aims to support and accommodate students' needs, fostering a sense of autonomy and motivation in their learning process. They can support the formation of the meaning of learning and learning awareness, which encourages junior high school students to take responsibility for their own learning and develop a sense of autonomy. Grolnick and Ryan (1987) proposed that fostering an environment that supports autonomy can positively influence students' levels of interest in learning. Wang and Eccles

(2012) suggest that if students are given the freedom to determine their own behavior, they will believe that learning is meaningful for them and will strengthen self-directed learning readiness. Stroet et al. (2013) argued that the need for competence provided energy to continue learning and opened up new learning experiences. This involvement can indicate a love of learning and have an impact on the initiative to learn and the willingness to take responsibility for learning. Similarly, Carpenter and Pease (2013) suggested that students can be enthusiastic about taking on more responsibility for their own learning if they feel that the teacher can help develop the skills needed to do so. It supported the achievement of students' self-directed learning readiness, which was marked by a love of learning, the willingness to take responsibility for their own learning, initiative in learning, being open to learning opportunities, and autonomy.

Teachers who apply a learning style that emphasizes meeting students' needs will help students gain mastery experience, get feedback on assignments given by the teacher so they can know and measure their abilities, in terms of their self-efficacy. Therefore, in this study, efficacy has a significant effect as a mediator between teaching styles that support needs and self-directed learning readiness.

The family was in the first and closest environment for students, and parental care can influence the development of a child's personality. Morton et al. (2011) found that parental influence was shown through parenting, and one form of parenting was transformational parenting. In this transformational parenting, parents behave as ideal role models for children, and show the values that their children want to live up to; emotionally open and expressive, warmly involved, loving, and emotionally accepting (ideal dimension of influence). Parents also encouraged children to have expectations that can be achieved, inspire and motivate children and ensure children are able to go beyond minimum standards, give children opportunities to do new things, experience challenges, stimulate children's interests, and promote children's skills and abilities. The dimension of inspirational motivation provides opportunities to do new things, have challenging experiences, stimulate children's interests, and promote children's skills, and abilities. Such characteristics of transformational parenting encourage children to be able to think independently and autonomously and strengthen children's sense of self-worth and competence. In addition, such transformational care was also a source of mastery, and a source of social persuasion, and a source of representative experience for children. Based on this description, it supports the hypothesis that there was an effect of transformational parenting on self-efficacy.

Emotions were closely involved in every aspect of the teaching and learning process (Schutz & Pekrun, 2007). Furthermore, Jossberger et al. (2010); Brandt (2020) suggested that the factor of emotional stability was very important for readiness for self-directed learning. This opinion can be explained by the broaden-and-build theory from Fredrickson (2001), which describes the form of positive emotion associated with an expanded thought-action repertoire and describes its function in building personal resources, both physical, social, intellectual, and psychological. Thus, positive emotions can affect all students' inner resources, including in relation to learning, and can affect the achievement of readiness for self-directed learning.

In terms of self-directed learning readiness, when students are able to manage negative emotions so that they do not damage their mood and thoughts, they can motivate themselves to continue to be enthusiastic about learning and can even expand the impact, namely by influencing various other aspects such as having initiative and being independent in learning, taking learning responsibility, and being able to build a positive self-concept. The ability to manage negative emotions is called emotional intelligence. In terms of self-directed learning readiness, emotional awareness can help students develop skills and self-mastery in managing negative emotions so that they do not undermine the process of self-regulation to continue to maintain learning motivation or even increase their intrinsic motivation. Besides that, students who have good emotional intelligence will motivate themselves to continue learning, love learning, be open to learning opportunities, and be willing to take responsibility for learning.

Conclusion

Facing the era of education 4.0 requires students starting at the basic education level to be ready for self-directed learning so that they are able to take part in learning at a higher level that uses a student based learning approach. Teachers and parents have an important role in building readiness for self-directed learning in junior high school students. Need-supportive teaching style and transformational parenting become source of autonomy in children's learning and self-efficacy. Taking responsibility for learning, having autonomy in learning, taking initiative to learn, and loving learning will not be realized when students have negative emotions. In this study, it has been proven that emotional intelligence has a significant effect on self-directed learning readiness.

Recommendations

The main contribution of our research is to increase teachers' knowledge about junior high school students' self-directed learning readiness by showing that need-supportive teaching styles, emotional intelligence, and student self-efficacy have a significant effect on student self-directed learning readiness. As in the current era, the education system becomes more personal, free to choose, project-based, flexible in time, and wherever learning can be held. Paying attention to these educational characteristics requires students to have independence and become self directed learners. Based on this background, the results of this study can become the basis for policy making by the head of the Education Office to

improve teacher competence in designing teaching styles that meet the needs of competence, autonomy, and relatedness, as well as in designing learning that can improve students' ability to manage emotions and also have the skills to do self-efficacy. For parents, it is better to apply transformational parenting to their children from an early age so as to form self-efficacy abilities and self-directed learner personalities.

Hiemstra and Brockett (2012) put forward a personal, process, and context (PPC) model in explaining self-directed learning readiness. Context factors include the school environment, learning environment, home environment, and cultural values. Cultural values are emotion-laden, internalized assumptions, beliefs, or standards that shape how individuals interpret life experiences (Merriam & Mohamad, 2000). For a student involved in interpreting the learning experience. Therefore, it is suggested for future researchers to include cultural value factors in the self-directed learning readiness model under study.

Limitations

The limitation of this study is that the sample size of 478 junior high school students, taken only in the urban area of Surabaya city, doesn't represent all regions in Indonesia, including other urban areas, sub-urban areas, and rural areas. In addition, this research only focuses on the influence of looking at students' internal factors, family and teacher's teaching style on self-directed learning readiness, has not linked the effect of culture in the formation of self-directed learning readiness in junior high school students.

Ethics Statements

This research has passed ethical clearance from the health research ethics committee, Faculty of Nursing, Airlangga University, Indonesia, with ethical approval no: 2841-KIPK. The participants provided their written informed consent to participate in this study.

Acknowledgments

This research was funded by the Chancellor of Universitas Muhammadiyah Surabaya, Indonesia.

Authorship Contribution Statement

Prihastiwati: Conceptualization, design, data acquisition, statistical analysis, and writing. Bambang Budi Wiyono: Final approval and supervision. Chusniyah: Critical revision of manuscript and Reviewing. Eva: Data analysis and interpretation.

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