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Investigating the Relationship between Students' Wellbeing and Reading Achievement: A PISA 2018 Analysis of Indonesian Students' Reading Comprehension

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A B S T R A C T

Studies have reported that resilience, sense of belonging, and eudaimonia are parts of student wellbeing constructs that contribute to higher student achievement. However, none of the studies tested the relationships between the three variables and student reading achievement. Therefore, this study aims to examine student wellbeing constructs of resilience, sense of belonging, eudaimonia, and the effects on these variables on students' reading achievement. This study also attempts to provide structural model depicting the interrelationships between students' wellbeing and student reading achievement. PISA 2018 Indonesia data were used in this study with the total sample of (n = 12,098) 15-year-old students in Indonesia. The data were analysed by employing structural equation modelling (SEM) technique using IBM SPSS AMOS 26. The findings of this study revealed that resilience, sense of belonging, and eudaimonia significantly and directly influenced student reading achievement, and only eudaimonia had a significant negative impact on reading achievement. The study also indicated that sense of belonging is the best predictor of higher student reading performance.

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1. Introduction

Students' wellbeing has become one of emerging issues in education. The increasing interest in students' wellbeing has been expressed by the Organization for Economic Cooperation and Development (OECD) who is continuously providing overarching approaches to inform the wellbeing of young people since 2009. During the past decades, some educational institutions have paid attention to this specific area in education and increased awareness regarding the relationship between student wellbeing and student achievement. Price and McCallum (2016) pointed out that student wellbeing is considered as a key to the twenty-first century education and related to educational agendas including numeracy and literacy. Hence, it emphasizes the links between student wellbeing and student reading achievement.

The Programme for International Student Assessment (PISA) has been assessing students' achievement to help educators understand performance differences and factors that contribute to the differences. PISA survey was established to help schools and policy makers in 79 participating countries and economies developing policies and practices. Since 2000, PISA have proven that education systems can facilitate students with equitable education and high-quality teaching and learning as well as provide students with an environment that supports their academic performances and their wellbeing (Schleicher, 2019). Moreover, student wellbeing factors have shown considerable effects on students' achievement (OECD, 2017) including sense of belonging, resilience, and life satisfaction. Kutsyuruba, Klinger and Hussain (2015) found that students' wellbeing was significant and strongly correlated with students' academic, social, and even emotional needs. Another study by Pietarinen, Soini, and Pyhältö (2014) highlights that students' emotional and cognitive engagement are regulated by students' wellbeing experience in schools, with students' sense of belonging regulates their cognitive engagement and it is correlated with student school performance.

Furthermore, resilience is a crucial determinant of student well-being and is considered to enhance student involvement. A study by Ahmed, Umrani, Qureshi and Samad (2018) found that that academic resilience and efficacy significantly and positively influence student engagement. The results from this study imply that higher level of resilience contributes to greater student engagement, which is a determining factor of student performance. Recent research also suggested that seeking meaning of life or known as eudaimonia positively contributes to student learning outcomes (Kryza-Lacombe, Tanzini, and O'Neill, 2019). Meanwhile, Holton (2016) reported the variability of responses of the eudaimonia impact on student academic performance. Thus, there is a conflicting evidence regarding the effect of this wellbeing trait on students' achievement.

The above studies have shown the relationships between students' wellbeing and students' achievement, yet no studies have been conducted to examine the interrelationships between students' wellbeing traits and student reading achievement. Therefore, to fill the gap in the research, this study investigates the effects of students' wellbeing variables in particular on student reading performance by using the PISA 2018 dataset for Indonesia. Furthermore, the study aims to examine the impact of students' wellbeing constructs of resilience, sense of belonging, and eudaimonia (meaning in life) on the 15-year-old Indonesian students' reading achievement, and to propose a structural model of intercorrelations among student wellbeing variables and student reading performance.

This research contributes to existing literature concerning student wellbeing as predictors for student reading achievement, especially in Indonesian context as very few studies have been conducted. Previous studies only examined the relationships between few variables of student wellbeing and student performance (Pietarinen et al., 2014; Ahmed et al., 2018; Kryza-Lacombe et al., 2019), and it was investigated in a different context. Therefore, this study serves as the first study to investigate the impacts of several wellbeing variables on the 15-year-old students' reading achievement in Indonesia. In addition to that, the results of the study are expected to inform educators and policy makers in Indonesia to develop wellbeing policies and practices in education to improve students' wellbeing and students' reading literacy.

The present study is restricted to obtain in-depth understanding of students' wellbeing impacts on student reading performance because it used a secondary data (PISA 2018) to investigate the effects of students' wellbeing on student reading achievement and the interrelationships among the selected variables. The PISA data is a large-scale data which used quantitative instruments such as questionnaires for collecting data. Thus, it is limited to explain how the phenomenon of students' wellbeing can improve students' reading achievement. Besides, this study is conducted specifically for Indonesian context and based on student questionnaires so that the interpretation may be limited to this context only. Nonetheless, this study can determine whether the variables of students' wellbeing are significant factors that contribute to students' literacy and whether they positively or negatively affect student reading achievement.

1.1 Student wellbeing

Wellbeing is seen as a concept that has not yet received a universal consensus on its definition. However, a few of past literatures suggest that the notion of wellbeing is not equitable to only searching for happiness in life. Keyes and Annas (2009) defined wellbeing as flourishing which means functioning well and feeling good in life, while Seligman (2011) argued that wellbeing consists of these elements: positive emotions, engagement, relationship, meaning, and accomplishment (PERMA). Huppert and So (2013) expanded the notion of wellbeing to encompass the display of these favourable attributes: competence, engagement, emotional stability, meaning, positive emotions, optimism, positive connections, self-esteem, resilience, and vitality. Based on the aforementioned definitions, the notion of wellbeing appears to share a common goal, which is to strive for a state of living well and feeling good in life, supported by the display of positive characteristics. Therefore, student wellbeing can be defined as students' aims as individuals to live a good life and feel positive about it by demonstrating positive characteristics.

There are many positive characteristics that fall under the umbrella of wellbeing. In this study, however, only three of them are discussed.

1.1.1 Resilience

Resilience is one of the most common positive traits to determine one's wellbeing. Resilience refers to the ability to recover after experiencing struggles, mistakes, and failures, being brave to overcome difficult situations, and having good coping skills (Noble & McGrath, 2016). Some explicit skills for resilience are good self-regulation and decision making, courageous, and resilient in academic and personal contexts. Resilience also involves risk taking to experience new things in life or to bounce back after rejections and failures. For example, not giving up on a challenging school task, coping with not getting top scores in class and resolving a misunderstanding with a colleague or a member of the family. Resilience is believed to be a fruitful trait that helps students to create more opportunities for successes and build their self- confidence (Noble & McGrath, 2012) which often related to academic performance.

In addition, Noble and McGrath (2012) pointed out that optimistic thinking contributes to the greater levels of resilience and wellbeing. This optimism includes positivity which is discovering something positive despite being in negative circumstances no matter how trivial it is, and mastery which is feeling competent and having power over one's life. In their study, Aldridge et al. (2016) utilized structural equation modelling (SEM) to investigate the connections between school climate variables and student wellbeing variables. The results revealed that student wellbeing is influenced by life satisfaction and resilience, both of which are directly influenced by school climates. These findings highlight the significance of school climates in shaping student learning goals. The study also reported that resilience positively affects student wellbeing indicating that students with greater resilience tend to gain better wellbeing.

A study by Ahmed et al. (2018) tested the direct and indirect effects of teacher support, academic resilience and efficacy on student engagement using the structural equation modelling techniques by running SmartPLS software. The research demonstrated a substantial positive correlation between the three variables with student engagement which is one of determining factors in predicting student achievement. However, resilience as predictor for student reading performance is still questionable. Therefore, the present study aims to examine the interrelationships between resilience and student reading performance in order to fill the gap in the research.

1.1.2 Sense of belonging

An individual's sense of belonging is a perception or emotion that is distinct from their actions and behaviours and is influenced by their interactions with others, a group of people, a community, or a system (Mahar, Cobigo & Stuart, 2013). In short, sense of belonging is feeling connected, needed, and respected in a community or simply a group of people. Sense of belonging as a perception means everyone has a different and subjective perception about their interactions with other people and how others reciprocate it. In a school community, students can feel sense of belonging from peer interactions and teacher-student interactions. Assessing sense of belonging in schools is important to investigate whether students are feeling engaged or not in teaching and learning environment.

Furthermore, sense of belonging is a part of subjective wellbeing which refers to how students perceived their own life in terms of being connected to their peers and teachers. Sense of belonging is also one of the factors contributing to students' emotional and cognitive engagement, and meaningful student learning experience (Pietarinen et al., 2014). Further, Gopalan & Brady (2020) and Pietarinen et al. (2014) reported that sense of belonging can shape students' cognitive engagement and the cognitive engagement was correlated with students' achievement in schools and higher education. Meanwhile, students' emotional engagement helps shaping students' wellbeing and contributes to their cognitive engagement. Based on this, it seems that sense of belonging which is a part of subjective wellbeing plays a significant contribution towards student performance. Therefore, this study includes sense of belonging as a student wellbeing variable that affects students' reading achievement.

1.1.3 Eudaimonia

Eudaimonia or meaning in life is one of the significant components of wellbeing. Extremera et al. (2011) pointed out that a sense of fulfilment and meaning in life are the two characteristics of eudemonic wellbeing. Eudaimonia is an important aspect to drive human being for functioning well in life and it is correlated with life satisfaction. The concept of eudaimonia is also related to the goal in life which is flourishing. It also has been described as seeking achievement and personal growth, creating meaning of life, and being future-oriented (Kryza- Lacombe et al., 2019). Seligman (2011) in

his book named 'Flourish' mentioned that meaning and accomplishment are part of wellbeing elements. These elements support positive emotions in a person to achieve their own wellbeing.

Few studies have shown that eudaimonia is significantly correlated with emotional intelligence and student achievement (Extremera et al., 2011; Kryza-Lacombe et al., 2019). Kryza-Lacombe et al. (2019) found a significant and positive relationship between eudemonic motives and student GPA. This suggests that students with stronger eudemonic objectives tend to have higher GPAs. Additionally, there was a significant and negative correlation between eudemonic motives and stress and depression. This indicates that students with higher levels of eudaimonia tend to experience a lower stress level and depressive disorder. The study suggested that eudaimonia is essential for students' wellbeing and it contributes positively to student learning outcome. Thus, this study includes eudaimonia as part of the constructs for the student wellbeing variable and examines the interrelationships between the other selected wellbeing variables and student reading achievement.

1.2 Student wellbeing and student academic achievement

The impact of student welfare on student academic progress is considered to be both direct and indirect. Student academic achievement includes reading achievement. The correlation between academic achievement and student well-being has been documented in numerous research pursuits, but not specifically for student reading achievement. To evaluate the connection between the two, one should look at components of wellbeing and student achievement. This study focuses only on resilience, sense of belonging and eudaimonia as part of student wellbeing constructs. According to Noble, Wyatt, McGrath, Roffey and Rowling (2008), there are four major pathways in which student wellbeing can indirectly improve student performance. Those pathways are by improving student motivation, student engagement, student attendance and school completion, and by reducing behavioural problems.

Student motivation can be differentiated into two categories: extrinsic and intrinsic motivation. Intrinsic motivation is an internal motive coming from a person to pursue an activity and is often associated with eudaimonia (Schawartz & Wrzesniewski, 2016). A person that have a strong eudemonic motive are more likely to improve their personal growth such being motivated in achieving better performance. Several studies have pointed out the link between the increase of student intrinsic motivation and the improvement of student academic achievement (Buckley & Doyle, 2016; Disabato et al., 2016; Baik, Larcombe & Brooker, 2019).

Furthermore, student engagement which is related to teacher-student and peer relationship is an important factor that contributes to student academic performance. Lee (2012) reported that teacher-student interactions significantly associated with emotional and behavioural student engagement, and it significantly predict reading achievement. As previously discussed, how students perceived interactions with their peers and teachers shapes their sense of belonging. Hence, sense of belonging is also related to student engagement and student achievement. Besides, sense of belonging helps reduce school dropouts and student behavioural issues. When a student feels belonged to the school and feels connected to their teacher and peers, they are more likely to be more active in learning (Prewett et al., 2019). Hence, students tend to engage in learning, avoid being involved in bullying, and have higher possibility to complete school.

Beside sense of belonging, another student wellbeing variable that positively contribute to student engagement is resilience. Skinner and Pitzer (2012) offered a motivational dynamics model for student engagement and school success. They highlighted that resilience was built from positive relationships in schools to prevent problem behaviour and delinquency, risks of student dropout, and to improve achievement. These positive relationships may come from students' engagement with their family or community, school extracurricular activities, teachers and classmates, and their own learning activities. The ability to overcome struggles and stay positive during difficult times is imperative to pursue academic achievement as Aldridge et al. (2016) and Ahmed et al. (2018) suggested that resilience significantly contributes to student learning outcomes.

In short, after discussing student wellbeing components (resilience, sense of belonging, and eudaimonia), many studies suggested that student wellbeing have significant effects on student academic achievement either directly or indirectly. Hence, there is a possibility of student wellbeing predicting student reading achievement. Therefore, this study constructs a hypothesized model based on the previous literature to examine the interrelationships between resilience, sense of belonging, eudaimonia and student reading achievement. Figure 1 below is the hypothesized model of this study.

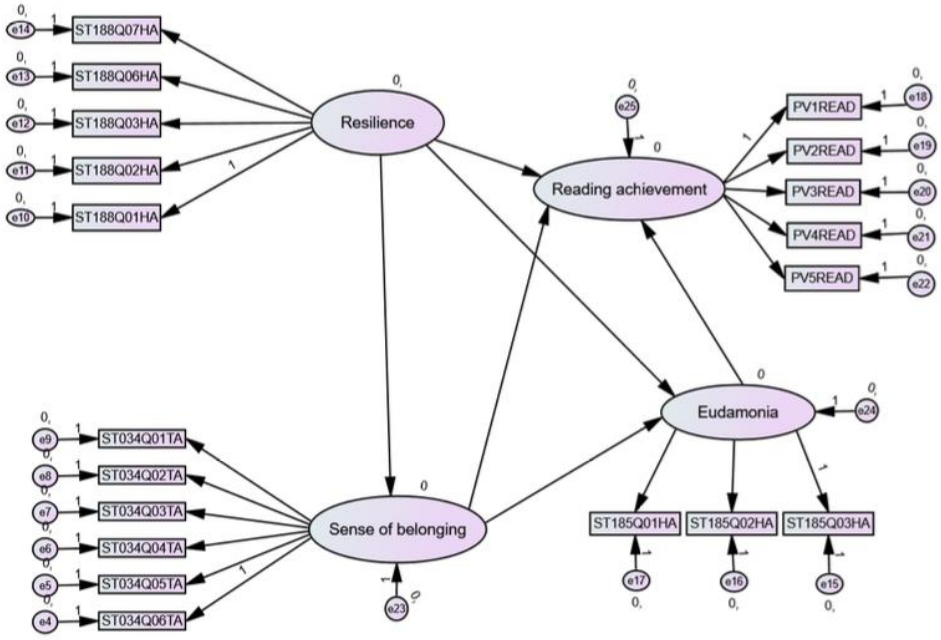

Figure 1. Hypothesized Path Model

2. Methods

2.1 Data and participants

The large-scale data from PISA 2018 for Indonesia was employed in this study (OECD, 2024). In 79 participating countries, PISA 2018 evaluated students' numeracy and literacy abilities, which encompassed mathematics, science, and reading. However, in this period, PISA 2018 focuses on student literacy and it also provided extensive data collection concerning students' wellbeing and attitudes. The sample for the PISA test is 15-year-old students who are enrolled in formal education from grade 7 to grade 13. A total of 12,098 students participated in the research, as indicated by the PISA 2018 data for Indonesia. Of the total number of students, 48.42% (n = 5,858) were male and 51.58% (n = 6,240) were female.

In PISA 2018, student reading scores were assessed through questions that involved three main aspects: processes, text formats, and situations (OECD, 2019). First, the process of displaying reading fluency encompasses the skills of discovering information, comprehending texts, deriving meaning from texts, examining texts, responding on texts, and judging the relevancy and reliability of texts. Second, text formats is a variety kind of texts such as single-source or multiple-source texts, texts in paragraphs and texts in graphic forms like diagrams. Third, situations are the purpose of the texts such as texts for personal use like personal letters and public use, for example, announcement or report. In data PISA 2018, there are many scales and subscales for reading achievement.

However, for the purpose of this study, five plausible values (PV) of reading scales from PV1 to PV5 were chosen as reading achievement variable to represent students' abilities in reading literacy which was calculated from student reading mean score.

In addition to that, student wellbeing variables were derived from variables consisting questionnaire items such as resilience, sense of belonging, and eudaimonia with a total of 14 items taken from PISA data 2018. Resilience comprised of five items, six items addressed sense of belonging, and three items concerned eudaimonia. These variables have been tested using SPSS descriptive statistics before conducting the SEM analysis to ensure its reliability and all data show normal distribution. A four-point Likert-scale format was employed to evaluate each statement in the student questionnaire of these items, with 1 representing "strongly disagree" and 4 representing "strongly agree" (refer to Table 1). The present study utilized the 14 items of student wellbeing questionnaires and student reading

achievement scores to examine whether the student wellbeing constructs are valid and to investigate the interrelationships between the variables and student reading achievement.

Table 1. Student wellbeing items and codes in PISA 2018

Student Wellbeing constructs	Item code	Item	Likert-scale
Resilience	ST188Q01HA	I usually manage one way or another.	1=strongly disagree 2=disagree 3=agree 4= strongly agree
	ST188Q02HA	I feel proud that I have accomplished things	
	ST188Q03HA	I feel that I can handle many things at a time.	
	ST188Q06HA	My belief in myself gets me through hard times.	
	ST188Q07HA	When I'm in a difficult situation, I can usually find my way out of it.	
Sense of Belonging	ST034Q01TA	I feel like an outsider (or left out of things) at school.	1=strongly disagree 2=disagree 3=agree 4= strongly agree
	ST034Q02TA	I make friends easily at school	
	ST034Q03TA	I feel like I belong at school.	
	ST034Q04TA	I feel awkward and out of place in my school	
	ST034Q05TA	Other students seem to like me.	
	ST034Q06TA	I have a clear sense of what gives meaning to my life.	
Eudaimonia	ST185Q01HA	My life has clear meaning or purpose	1=strongly disagree 2=disagree 3=agree 4= strongly agree
	ST185Q02HA	I have discovered a satisfactory meaning in life.	
	ST185Q03HA	I have a clear sense of what gives meaning to my life.	

2.2 Model and analysis

The IBM SPSS AMOS 26 software was employed to analyse the data in this research project using Structural Equation Modelling (SEM). Further, SEM has the potential to expand the range of potential relationships among latent variables or unobserved variables, as it can be implemented for purposes other than confirmation (Schreiber et al., 2006). The model supports a visual statistical analysis for representing causal relationship in multivariate data in social and behavioural research. This model method is more comprehensive than the utilization of conventional statistical methods, such as *t-test*, correlation tests, and descriptive statistics. Initially, this study employed a confirmatory factor analysis (CFA) to estimate the factor loadings between the latent variable and the observed variable. Subsequently, a structural model analysis was implemented to evaluate the extent of intercorrelations among the latent variables.

3. Results and Discussion

The results of data analysis using the SEM technique by executing the AMOS software are presented in the subsequent sections. The measurement model will be presented in the initial section of the results, which investigates the relationships between the latent variables and the observed variables. Further, the structural model or SEM analysis is then presented in the subsequent section, which illustrates the interrelations between the latent variables (resilience, sense of belonging, and eudaimonia) and literacy/reading achievement.

3.1 Measurement Model

The measurement model defines the connection between the latent variables and their observable variables. The results from the first run of AMOS software revealed that all the factor loadings in the measurement part of the model were significant except for 'sense of belonging' and observed variable coded 'ST034Q05TA' which was 'Other students seem to like me.' item since it was below 0.30. Hence, after deleting this variable, the data were analysed for the second time. The result from second run showed that only 'sense of belonging' and observed variable coded 'ST034Q03TA' which was 'I feel like I belong at school.' were found insignificant as the factor loading is below 0.30. Thus, after deleting this observed variable, the data were analysed for the third time. Finally, the results from third run revealed that all the latent variables and its observed variables were found to be significant since the factor loadings are greater than 0.30 (See Table 2). In short, this confirmatory factor analysis part confirms that from a total of 14 items for the student wellbeing constructs, 12 questionnaire items confirms the valid constructs for student wellbeing with five items (ST188Q01HA, ST188Q02HA, ST188Q03HA, ST188Q06HA, ST188Q07HA) belong to resilience, four items (ST034Q01TA , ST034Q02TA, ST034Q04TA, ST034Q06TA) belong to sense of belonging and three items (ST185Q01HA, ST185Q02HA, ST185Q03HA) belong to eudaimonia.

Table 2. Standardized final measurement model loadings

Latent variable	**Observed variable (code/item)**		**Factor loadings**
Resilience	ST188Q01HA	I usually manage one way or another.	0.60
	ST188Q02HA	I feel proud that I have accomplished things	0.66
	ST188Q03HA	I feel that I can handle many things at a time.	0.57
	ST188Q06HA	My belief in myself gets me through hard times.	0.69
	ST188Q07HA	When I'm in a difficult situation, I can usually find my way out of it.	0.68
Sense of Belonging	ST034Q01TA	I feel like an outsider (or left out of things) at school.	0.76
	ST034Q02TA	I make friends easily at school.	-0.31
	ST034Q04TA	I feel awkward and out of place in my school.	0.79
	ST034Q06TA	I feel lonely at school.	0.80
Eudaimonia	ST185Q01HA	My life has clear meaning or purpose.	0.71
	ST185Q02HA	I have discovered a satisfactory meaning in life.	0.85
	ST185Q03HA	I have a clear sense of what gives meaning to my life.	0.82

Based on table 2, all the indicators of resilience had high factor loadings and positively correlated with sense of belonging, with the best indicators were 'My belief in myself gets me through hard times.' (r= 0.69) and 'When I'm in a difficult situation, I can usually find my way out of it.' (r= 0.68), while the weaker indicator was 'I feel that I can handle many things at a time.' (r= 0.57). Meanwhile, all of sense of belonging indicators had high factor loadings and positive relationship with sense of belonging except for 'I make friends easily at school.' (r= -0.31). The best indicators were 'I feel lonely at school.' (r= 0.80) and 'I feel awkward and out of place in my school.' (r= 0.79). Finally, for the last latent variable, eudaimonia, all indicators were found to have high factor loadings and positively related to eudaimonia. The best indicator for eudaimonia was 'I have discovered a satisfactory meaning in life.' (r= 0.85).

Furthermore, the fit indexes were used to determine whether the hypothesized final model was a good fit. Schreiber et al. (2006) suggested the standard for goodness-fit- indexes for categorical data which is the model is considered acceptable fit if Normed fit index (NFI), IFI (Incremental fit index), CFI (Comparative fit index) ≥ 0.95, TLI (Tucker-Lewis index) ≥ 0.96, and RMSEA (Root mean square error of approximation) < 0.06. The results as shown in Table 3 indicated that there was a good fit

between the model and the observed data, $\chi 2$ (113) = 2752.837, $p < 0.05$, with NFI, IFI, TLI, and CFI values of 0.98 and RMSEA = 0.04. Therefore, based on the results of the fit indexes, the model suggested in this study fit the PISA data 2018 exceptionally well.

Table 3. Goodness-of-fit indexes (SEM)

Indexes	Values
Chi-square ($\chi 2$)	2752.837
Degree of freedom (df)	113
Chi-square/df	24.361
NFI (Normed fit index)	0.982
IFI (Incremental fit index)	0.983
TLI (Tucker-Lewis index)	0.977
CFI (Comparative fit index)	0.983
RMSEA	0.044

3.2 Structural model

The interrelationships between the latent variables and observable variables in the hypothesized model are described in the structural model analysis. The structural model in this study illustrated the interrelations between resilience, sense of belonging, eudaimonia, and literacy achievement by examining the direct, indirect, and total effects of these variables. The results of this analysis were presented in Table 4 which showed the standardized regression weights of SEM final model. Table 4 revealed that resilience significantly and positively affected sense of belonging (β = 0.25, SE = 0.019, $p < 0.05$) indicating the more resilient the students, the higher their sense of belonging. In addition to that, resilience also had a significant positive impact on eudaimonia (β = 0.48, SE = 0.018, $p < 0.05$) implying more resilient students tend to have greater meaning in life. Resilience also had a significant positive direct effect on reading achievement (β = 0.05, SE = 2.710, $p < 0.05$) which indicated that students with higher resilience tend to perform better in reading. Table 4 further reported that sense of belonging had a significant positive relationship with eudaimonia (β = 0.11, SE = 0.009, $p < 0.05$) suggesting the higher students' sense of belonging, the greater their perception of meaning in life. Moreover, sense of belonging had a significant positive direct relationship with reading achievement (β = 0.25, SE = 1.366, $p < 0.05$) which suggests that learners who experience a stronger sense of belonging tend to demonstrate superior reading abilities. Meanwhile, as demonstrated in Table 4, the results revealed that eudaimonia had a significant negative direct relationship with reading achievement (β = -0.14, SE = 1.844, $p < 0.05$) implying that students who have greater meaning in life tend to obtain lower reading scores.

Table 4. Standardized regression weights of SEM final model

Variables		B	SE	P
Resilience	→ Sense of belonging	0.25	0.019	***
Sense of belonging	→ Eudaimonia	0.11	0.009	***
Resilience	→ Eudaimonia	0.48	0.018	***
Eudaimonia	→ Reading achievement	-0.14	1.844	***
Sense of belonging	→ Reading achievement	0.25	1.366	***
Resilience	→ Reading achievement	0.05	2.710	***

The results for the direct, indirect, and total effects of the latent variables on reading achievement were presented in table 5. The three significant direct effects on reading achievement were attributed to resilience, as indicated by the table. (0.05), sense of belonging (0.25), and eudaimonia (-0.14). Resilience and sense of belonging were predictive of higher reading performance, while eudaimonia was predictive of lower reading performance. In addition, there were two significant indirect effects on reading achievement: resilience (- 0.01) and sense of belonging (-0.01). The negative indirect relationship between resilience, sense of belonging and reading achievement was mediated by

eudaimonia. In addition, 4% of the variability in students' reading accomplishment may be attributed to the impact of resilience, while 23% of the variability in students' reading scores can be attributed to the influence of sense of belonging. Meanwhile, 14% of the variability in student reading achievement can be attributed to the negative impact of eudaimonia. The best predictor of the variance in student reading achievement was their sense of belonging.

Table 5. Standardized direct, indirect and total effects on reading achievement

Latent Variables	Sense of belonging			Eudaimonia			Reading Achievement		
	direct	indirect	total	Direct	Indirect	Total	Direct	indirect	Total
Resilience	0.25		0.25	0.48	0.03	0.51	0.05	-0.01	0.04
Sense of belonging				0.11		0.11	0.25	-0.01	0.23
Eudaimonia							-0.14		-0.14

Figure 2 exhibited the structural model of the interrelationships between resilience, sense of belonging, eudaimonia, and reading achievement using PISA 2018 data for Indonesia. The final model showed in figure 2 also indicates the factor loadings and reliability of the 12 items for student wellbeing constructs. The arrows illustrate the interrelationship either positive or negative among the observable variables (the items in the squares), such as ST188Q07HA and the latent variables (the items in the ellipses), like "Resilience". Meanwhile, the items in the small circle like e14 represent measurement errors which called epsilon (e). The factor loadings for all items in the model range from 0.31 to 0.85, all of which exceed the threshold of 0.30. This indicates that all items are valid for this model. The R-square values or reliabilities of the items range from 0.09 to 0.73. One item, ST034Q02TA, has a low R-square score of 0.09, indicating that only 9% of the variance in subjective norms can be explained by this item. Therefore, one component of this model may lack reliability. Nevertheless, the remaining components are valid and very dependable for the ultimate model.

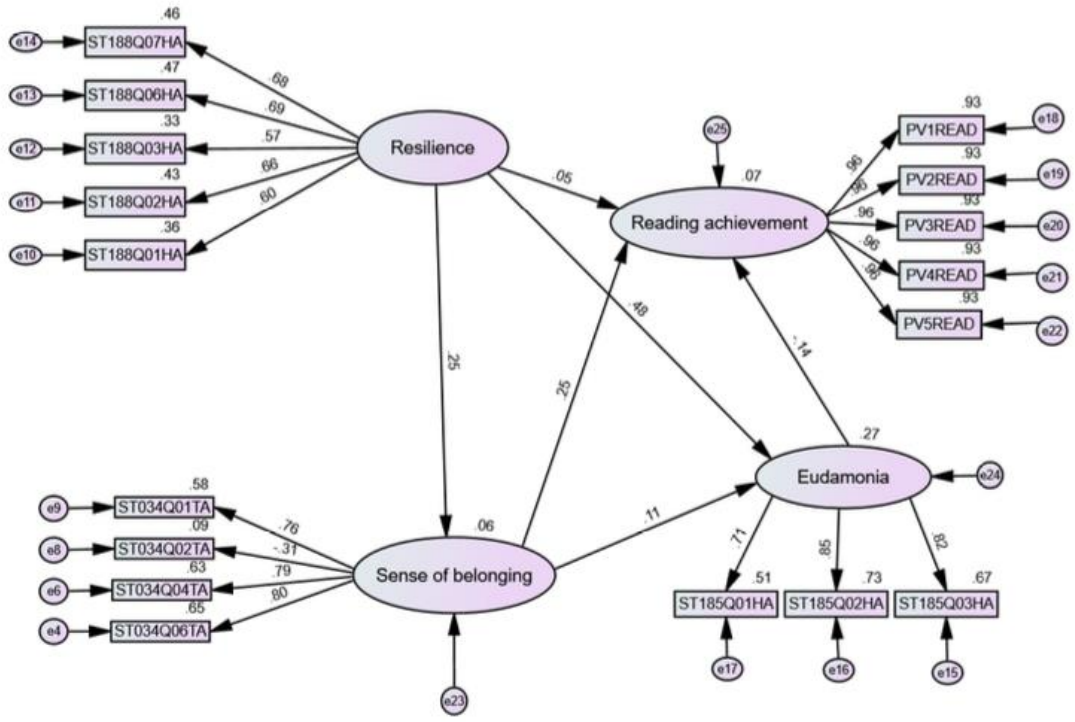

Figure 2. Final path model

The confirmatory factor analysis (CFA) results validate that 12 out of the 14 questionnaire items from the hypothesized model in Figure 1 are valid for measuring the student wellbeing scale. Nonetheless, the initial structural model supports the final model in which SEM model explains the interrelationship between resilience, sense of belonging, eudaimonia, and reading achievement. This study found that student wellbeing constructs (resilience, sense of belonging, and meaning in life) directly influence students' reading performance, and resilience and sense of belonging also indirectly affect reading achievement through eudaimonia. In addition to that, sense of belonging becomes a mediating factor that contributes to the difference of students' wellbeing in terms of seeking meaning in life.

This study suggests learner who possess a higher level of resilience and a stronger sense of belonging are more inclined to achieve better results in reading. The results of this study align with earlier research that supports the strong beneficial connections between resilience, feeling of belonging, and student learning outcomes (Aldridge et al., 2016; Ahmed et al., 2018; Pietarinen et al., 2014). Nevertheless, this study found a negative correlation between higher levels of eudaimonia or sense of success (Alam, 2022; Seligman, 2011) and reading performance in students. This finding contradicts the earlier study conducted by Kryza-Lacombe et al. (2019), which suggested that eudemonic motives have a favorable impact on student performance. However, it does support the notion of conflicting findings, as highlighted by Holton (2016). Nonetheless, it should be noted that the present study was conducted in Indonesia so that belief and values of eudaimonia might also be differently interpreted. Another possible reason of this conflicting evidence is students who have a clear meaning of life and feel accomplished may read less than those who are determinedly seeking meaning of life. Therefore, further qualitative studies on the impact of eudaimonia and students' reading achievement should be conducted as the present study is limited to explain the phenomenon especially in Indonesian context.

4. Conclusion

The present study recommends educators and policy maker to develop policies and practices promoting students' resilience and sense of belonging in educational institutions in Indonesia. Student wellbeing interventions in schools should be conducted to increase student reading performance. Character strengths intervention proposed by Peterson and Seligman (2004) is one of many examples of interventions to improve student wellbeing and student learning outcomes.

Furthermore, it is imperative for family members, peers, instructors, and school administrators to work together in order to establish a favourable school environment and foster a greater enthusiasm for reading, ultimately enhancing children' reading proficiency. Overall, this study's findings shed light on the connections between student wellbeing factors such as resilience, sense of belonging, eudaimonia, and reading achievement. Given that the findings indicated that resilience and sense of belonging strongly correlated with increased student reading achievement, it is recommended that interventions targeting these aspects of wellbeing be introduced in Indonesia to enhance students' literacy skills.

Due to the nature of quantitative approach, the present study only provided the valid indicators for student wellbeing constructs and its structural model as well as directionality of significant relationships between all the variables. Besides, the data used in this study were from students' questionnaire in PISA 2018. Hence, the interpretation of the results was limited from students' perspective. Therefore, further studies should investigate the interrelationships between the student wellbeing variables and reading achievement from teachers' or parents' perspectives.

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