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Development and instrument validation of Indonesian achievement motivation scale using the Rasch model

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ABSTRACT

This research involves the development of items on an achievement motivation scale that is used in improving the achievement motivation of senior high school students. No research on instrument development has been carried out on measuring the level of achievement motivation of senior high school students in Indonesia. Participants tested the development of 38 items and consisted of 1,909 respondents as students from senior high schools in the City of Surabaya. The utilized analysis technique was the Rasch model. Results of applying the Rasch analysis indicated that achievement motivation scale was good, proper, and appropriate in items to the model. The accomplishment motivation scale is a valid and dependable instrument for precisely determining pupils' levels of accomplishment motivation. In light of the achievement motivation scale results, this study explores the consequences and suggests directions for future research on the use of guidance and counseling.

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1. INTRODUCTION

Senior high school students, by their development, have already begun to think about their future [1]. This must be accompanied by motivation that emerges from themselves and supported by their environment, in order for them to be successful in their careers [2]. Motivation becomes one of the most important determinants in the learning process [3], [4]. One of the kinds of motivation is achievement motivation [5]. Achievement motivation is an aspect that is required in academic success [6], [7]. Achievement motivation may be understood as the desire to obtain achievements, both academic and non-academic [8], [9].

The last five years have seen a significant increase in interest in accomplishment motivation studies. The conclusion drawn from the studies to date is that achievement motivation has a significant role in predicting students' academic success [6], [10], [11]. Furthermore, a significant moderating factor for academic dishonesty and procrastination is accomplishment motivation [12]–[15]. However, students tend to become less motivated to achieve as they get higher in the educational system [16], [17]. Research related to achievement motivation has been conducted in various countries. Research in India found that achievement motivation causes low academic stress [18]. Furthermore, research in Iran found that low achievement motivation was the most influential factor in academic burnout [19]. Likewise, analysis of global research results concludes that academic dishonesty is negatively related to achievement motivation [15]. In fact, research in Nigeria found that counselors need to have strategies to increase students' achievement motivation in facing exams [20].

Research was out in Indonesia also turned-out pertinent information. According to Atmoko's research, there are notable variations in students' motivation for achieving their goals, and she suggests services to boost this drive [21]–[23]. Accordingly, Atmoko's research findings indicated that services to boost accomplishment motivation were necessary and that achievement motivation led to an increase in learning behavior [24], [25]. A student who does not possess motivation in learning tends to not possess responsibility and tends to defer all activities, and thus would not be able to carry out learning activities very well [26], [27]. For students to achieve success in learning, the role of teachers, tutors, and counselors as motivators becomes required in order to drive and encourage students to be spirited in learning and thus to be able to achieve learning outcomes in the best way [28], [29].

McClelland defined achievement motivation as the desire that can drive individuals to attain success in a contest or competition according to several standards of excellence [30], [31]. Achievement motivation is the curious drive that can be developed during the learning process, as well as the attitude that develops and encourages to achieve learning outcomes, and thus achievement motivation will affect the learning outcomes of students [32]. The presence of encouragement from within students themselves to succeed, work hard, achieve better learning outcomes, and strive to avoid failure in learning allows them to be more confident and active in learning to achieve better learning outcomes [33], [34]. Meanwhile, this is reinforced by the presence of abilities that are used to maximize oneself in overcoming various obstacles, with the objective of obtaining achievements [35]–[37].

According to McClelland, the characteristics of achievement motivation may be explained based on the six dimensions of individuals, as possessing personal responsibility, willing to accept consequences from decision-making, adjusting the level of difficulty in working on tasks, being able to complete tasks with various alternatives, enjoying feedback, and being able to organize times for task completion [30], [31]. Conversely, low achievement motivation can increase procrastination and reduce the ability to be responsible for a possessed task [38]–[40]. Even students who procrastinate in academics possess the tendency to obtain low grades for each subject and on final examinations [41]–[43]. According to Khattab [44], many children still possess low achievements in learning. If this continues to occur, the willingness to learn and ability to face difficulties will also decrease [45], [46]. Some of the factors that affect achievement motivation are the role of parents/teachers/peers, learning facilities, possibility of success, fear of failure, self-efficacy, and gender [45], [47], [48].

Based on the explanation, the development of an achievement motivation scale then becomes quite urgent in order to measure the achievement motivation of students, which is useful in various cases. A previous study had resulted in an achievement motivation scale [26], [37]. However, that research used the technique of factor analysis, whereas this research is intended to use Rasch analysis. Rasch analysis, which is used to evaluate data collection instruments, is known for its thoroughness and accuracy in data analysis [49]. Therefore, as the product of this research, an achievement motivation scale is appropriate and accurate to be used to measure the condition of student motivation.

2. METHOD

2.1. Participants

The participants for this research were composed of 1,909 senior high school students. Stratified random sampling was the method utilized to choose research participants from 18 senior high schools in Surabaya, Indonesia. In this research, all participants involved in this research were concealed in order to maintain their confidentiality. In this way, the security and good standing of participants are also maintained.

2.2. Data collection tools

An achievement motivation scale was used to measure the achievement motivation of students, which comprised four indicators [30]: i) enjoyment of academic tasks that are challenging to be completed; ii) responsibility toward the possessed academic tasks; iii) possession of innovation in learning; and iv) utilization of feedback in every conducted effort.

2.3. Data collection

This research went through several procedure stages of data collection. The first stage was the preparation for the research. In this stage, the research plan was created and the research materials were prepared. This effort supported the execution of the research in its various stages. The creation of the research instrument's draft was the second phase. At this point, the achievement motivation scale instrument grid started to take shape. The achievement motivation scale instrument's draft underwent a process of expert examination to see whether each item's phrasing was adequate.

The research was carried out at the third stage. Using Google Forms, the achievement motivation scale instrument format was developed at the study implementation stage. The students' ability to complete the instrument was aided by this effort. The implementation of data analysis and report writing constituted the fourth step. Rasch analysis was used at this point to analyze the data.

2.4. Data analysis

Analysis of research data using Winstep program and Rasch analysis [50]. Rasch's analysis was predicated on two essential theorems: the degree of individual ability/agreement and the degree of difficulty of the item to be accepted [50]. The psychometric instruments, which serve as the foundation for the analysis of the study data, comprise summary statistics, which include the quality of respondents, instruments, and interactions between individuals and items. Additionally, item measure (things that respondents find most difficult to agree upon and easiest to agree upon), item fit order (items that fit and misfit), and unidimensionality (the capacity to measure what ought to be assessed) are provided by this study.

3. RESULTS AND DISCUSSION

One of the outcomes for the study and research is the achievement motivation scale instrument validation results. The purpose of the study is to demonstrate the quality of the instrument, the quality of the respondents, the interactions between people and items, the items that respondents find most difficult and easiest to agree upon, the appropriate and inappropriate items, and the instrument's ability to measure what needs to be measured. Rasch analysis was used to identify construct validity, and the results are descriptions for the investigation of these four features.

A description of summary statistics is shown in Figure 1. The figure's first section provides detailed information about the instrument's quality, the respondents' responses to it, and how people interact with the things. The values in this case showed that the respondents generally agreed with the comments made in a range of items. Cronbach's alpha, a measure of an instrument's reliability, came out to be 0.65, which is deemed good. Figure 1 additionally demonstrated that the item's coefficient of dependability was 1.00 and the person's was 0.86. These values showed that although the instrument's item quality was acceptable, respondents' consistency in answering was lacking.

```
     SUMMARY OF 1906 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E.      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     113.5      38.0         .00     .26      1.01   -.17   1.01   -.16 |
|  SEM        .3         .0         .02     .00       .01    .05    .01    .04 |
| P.SD      11.1         .0         .74     .03       .38   1.98    .38   1.78 |
| S.SD      11.1         .0         .74     .03       .38   1.98    .38   1.78 |
| MAX.     151.0      38.0        4.56    1.01      2.34   5.49   3.91   5.70 |
| MIN.      91.0      38.0       -1.57     .24       .23  -6.45    .30  -5.22 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .28 TRUE SD     .68  SEPARATION  2.43  PERSON RELIABILITY  .86 |
|MODEL RMSE    .26 TRUE SD     .69  SEPARATION  2.67  PERSON RELIABILITY  .88 |
| S.E. OF PERSON MEAN = .02                                                   |
-------------------------------------------------------------------------------
               DELETED:      3 PERSON
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .87  SEM = 3.99 (approximate due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .90

     SUMMARY OF 38 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E.      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN    5691.5    1906.0         .00     .04      1.00   -.45   1.01   -.14 |
|  SEM      92.3         .0         .12     .00       .06   1.46    .05   1.39 |
| P.SD     561.4         .0         .73     .00       .34   8.90    .31   8.44 |
| S.SD     568.9         .0         .74     .00       .34   9.02    .32   8.55 |
| MAX.    7078.0    1906.0        1.14     .05      1.54   9.90   1.60   9.90 |
| MIN.    4821.0    1906.0       -1.98     .03       .50  -9.90    .52  -9.90 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .04 TRUE SD     .73  SEPARATION 18.63  ITEM   RELIABILITY 1.00 |
|MODEL RMSE    .04 TRUE SD     .73  SEPARATION 20.04  ITEM   RELIABILITY 1.00 |
| S.E. OF ITEM MEAN = .12                                                     |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -1.00 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Figure 1. Results of summary statistics of the Rasch model

To determine if the item statements are fit or unfit (valid or invalid), the item fit order was tested. The Rasch model's item validity test was carried out by using a normal bound on the outfit MNSQ and out ZSTD value columns. INFIT MNSQ and OUTFIT MNSQ were additional data points, as shown in Figure 1. The mean values for the person table were 1.01 and 1.00; higher quality values are found closer to 1.00. The person table's mean values for INFIT ZSTD and OUTFIT ZSTD were 0.17 and 0.16, respectively (values closer to 0 are better in quality). In the meantime, the item table's INFIT MNSQ and OUTFIT MNSQ values were 0.99 and 1.00, respectively (values nearer 1.00 indicate higher quality). For the item table, the INFIT ZSTD and OUTFIT ZSTD values were 0.45 and 0.14, respectively (numbers closer to 0 are better in quality).

Results of reliability testing indicated that the quality of Cronbach's alpha had a coefficient of 0.88, which meant that the instrument is in the very good classification. Cronbach's alpha testing involves testing the overall interaction between people and items. Next, the Rasch model also revealed reliability based on a person (subject) and statements in items. The results of testing indicated that the coefficient of person reliability is in the very good category, which is indicated by a value of 0.88, meaning that the students answered consistently for each item of this instrument. The item reliability coefficient showed a value of 1.00, meaning that the instrument is in general very good and thus there are no issues of concern [51].

A changeable map is shown in Figure 2. The distribution of questions with the same scale of difficulty and accomplishment incentive are shown by variable map analysis. The distribution of subject abilities is shown on the left, while the item difficulty level is shown on the right. The most difficult topic for responders to agree with, according to the study results, is item number 15 (When taking an exam, I would rather cheat than do it myself). The easiest item, however, for respondents to agree with is number 6 (I am confident that if I study well, I can achieve good results in the exam).

Figure 3 shows differential item function. Based on Figure 3, it can be concluded that the items that contained bias were items 4, 10, and 15, because the three items had values of <0.05. Bias can be said to be absent if the value of p>0.05. Item number 4 reads "I prefer exam questions that only choose true or false, rather than exams that require answers with explanations". Next, item number 10 reads "In between busy schedules, I do my academic assignments regularly". Item number 15 reads "When taking an exam, I would rather cheat than do it myself". Of all the items, the most difficult was item 15.

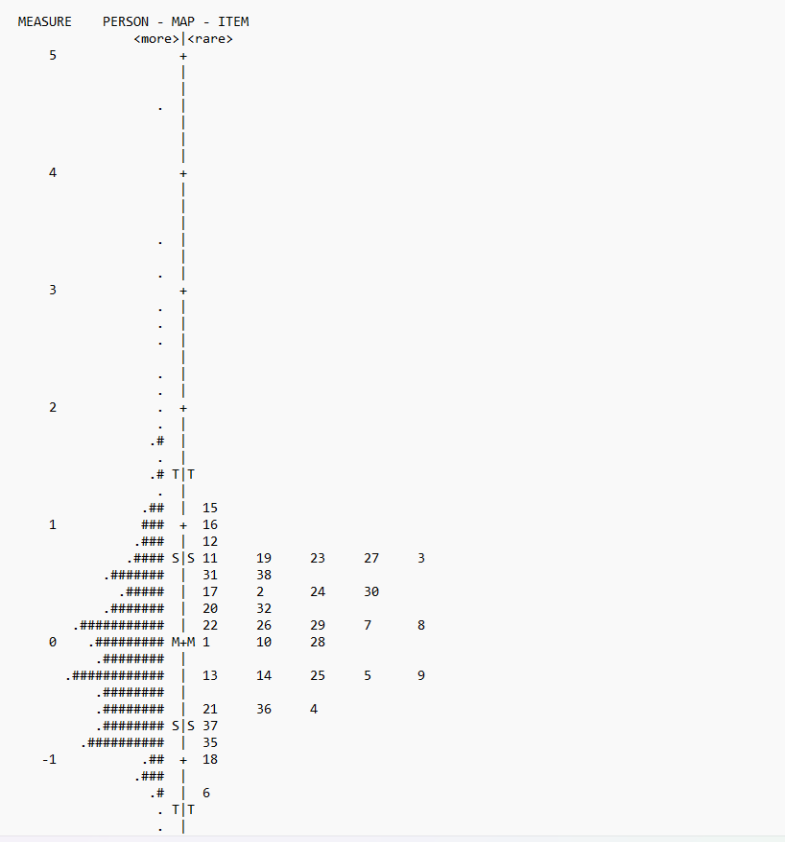

Figure 2. Variable map

DIF class/group specification is: DIF= @CLASSES

PERSON CLASSES	SUMMARY DIF CHI-SQUARED	D.F.	PROB.	BETWEEN-CLASS/GROUP ITEM UNWTD MNSQ	ZSTD	Number Name
3	4.6128	2	.0978	2.2709	1.28	1 1
3	4.9764	2	.0814	2.4838	1.40	2 2
3	1.9700	2	.3698	.9785	.31	3 3
3	15.6668	2	.0004	7.9179	3.31	4 4
3	.1103	2	.9482	.0796	-1.38	5 5
3	2.5302	2	.2788	1.3043	.61	6 6
3	5.1920	2	.0731	2.5781	1.45	7 7
3	5.1653	2	.0741	2.5801	1.45	8 8
3	.7149	2	.6982	.3558	-.54	9 9
3	6.5649	2	.0367	3.2701	1.79	10 10
3	2.7675	2	.2473	1.3864	.68	11 11
3	.5689	2	.7519	.2831	-.70	12 12
3	.4400	2	.8028	.2289	-.83	13 13
3	2.0504	2	.3551	1.0096	.34	14 14
3	10.0317	2	.0065	5.0485	2.48	15 15
3	6.7319	2	.0337	3.3853	1.84	16 16
3	2.5994	2	.2692	1.3191	.62	17 17
3	2.5052	2	.2823	1.2632	.58	18 18
3	3.6317	2	.1601	1.8133	.99	19 19
3	.7372	2	.6903	.4090	-.44	20 20
3	1.2611	2	.5292	.6473	-.07	21 21
3	1.1350	2	.5641	.5623	-.19	22 22
3	3.9954	2	.1333	1.9975	1.11	23 23
3	.8749	2	.6437	.4607	-.35	24 24
3	.8539	2	.6506	.4229	-.41	25 25
3	1.2137	2	.5421	.6238	-.10	26 26
3	4.6820	2	.0944	2.3542	1.32	27 27
3	3.3163	2	.1876	1.6383	.87	28 28
3	3.9494	2	.1364	1.9698	1.09	29 29
3	5.5537	2	.0610	2.7731	1.55	30 30
3	8.5463	2	.0136	4.2929	2.21	31 31
3	.4409	2	.8024	.2295	-.83	32 32
3	.2686	2	.8756	.1805	-.97	33 33
3	.1588	2	.9255	.1003	-1.27	34 34
3	.3905	2	.8231	.1932	-.93	35 35
3	.1257	2	.9410	.0988	-1.28	36 36
3	.1885	2	.9118	.1492	-1.08	37 37
3	5.7109	2	.0563	2.8735	1.60	38 38

Figure 3. Differential item function

Figure 4 shows plot of differential item function (DIF). Next, this plot in Figure 4 is a visual version of the analysis presented in Figure 3, in that the chart indicates the difficulty level for each group. As the chart climbs higher, the item becomes more difficult for that group.

The research results lead to the discovery that the achievement motivation scale is a valid measurement tool to gauge the achievement motivation of senior high school students. This will later on be able to aid counselors in developing the potentials of students with the motivational capabilities that counseling possesses. Furthermore, achievement motivation in the culture of Indonesian students tends to follow the value of emphasizing compliance to fulfill social expectations (particularly those of parents) for the achievement of academic objectives in school [52], [53]. Afterwards, elucidated that the formulation of success standards pertains to three standards: i) individual norm: people assess whether their performance has improved, gotten worse, or remained the same by comparing it to past results; ii) social norm: people assess their performance by comparing it to other people's performance; and iii) objective norm: people assess the outcome based on strict standards that correspond to the task [54]. The three norms are intentionally applied by people who have internalized achievement-oriented thought and behavior while setting success criteria [33]. Because of this, people with high accomplishment motivation will go through a dynamic process of self-evaluation regarding their criteria of success. This will then cause a shift in the subculture and motivate people to try to better their performance in order to reach their success goal [55].

Figure 5 describes distribution of all schools. Based on the school distribution, it could also be interpreted that the obtained reliability of 0.86 also indicated a regularity in the selection of the achievement motivation scale instrument. The hope is that by developing the achievement motivation scale instrument, it can be used in an effort to prevent students from experiencing academic stress and burnout [56], [57]. Apart from that, it can also maximize existing interests and talents to develop students who have enthusiasm and are able to make greater contributions that realize their achievement motivation [4].

Figure 6 shows analysis based on gender. Additionally, from the gender perspective, this achievement motivation scale has a standard deviation of 0.74, with a median of 0.16 for males and 0.04 for females, as well as a model separation of 2.67 and a reliability of 0.88, which is close to 1.00 and considered good [58]. The median for males was greater than for females. In fact, this is also affirmed by several previous studies, including where it was found that the achievement motivation of females is greater than that of males [59], [60]. Further, academic motivation is also affected by self-regulated learning [61]–[64].

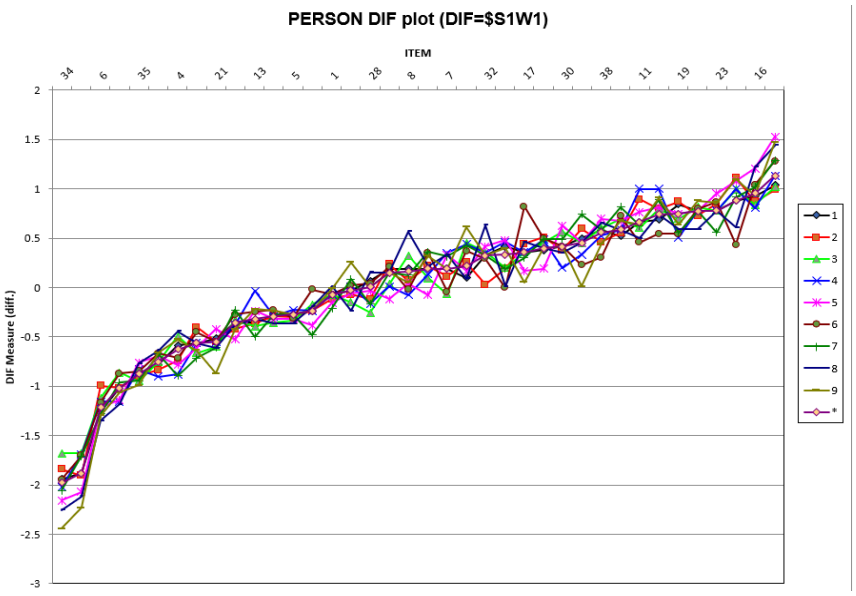

Figure 4. Plot of DIF

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	112.6	38.0	-.06	.26	.97	-.37	.98	-.32
SEM	.8	.0	.05	.00	.03	.17	.03	.15
P.SD	10.5	.0	.69	.02	.39	2.16	.39	1.95
S.SD	10.5	.0	.69	.02	.39	2.17	.39	1.96
MAX.	148.0	38.0	3.12	.52	2.31	5.39	2.27	4.75
MIN.	95.0	38.0	-1.23	.24	.23	-6.45	.30	-5.22

REAL RMSE	.28	TRUE SD	.63	SEPARATION 2.28	PERSON RELIABILITY .84
MODEL RMSE	.26	TRUE SD	.64	SEPARATION 2.49	PERSON RELIABILITY .86

S.E. OF PERSON MEAN = .05
MEDIAN = -.10

Figure 5. Distribution of all schools

ALL PERSON SCORES ARE NON-EXTREME

PERSON COUNT	MEAN SCORE	MEAN COUNT	MEAN MEASURE	S.E. MEAN	P.SD	S.SD	MODEL MEDIAN	MODEL SEPARATION	MODEL RELIABILITY	RMSE	TRUE SD	MEAN OUTFIT	CODE
1906	113.5	38.0	.00	.02	.74	.74	-.10	2.67	.88	.26	.69	1.01	***
644	112.9	38.0	-.03	.03	.74	.74	-.16	2.66	.88	.26	.69	1.00	Male
1262	113.7	38.0	.02	.02	.74	.74	-.04	2.67	.88	.26	.69	1.01	Female

Figure 6. Analysis based on gender

4. CONCLUSION

From this research, it may be concluded that the achievement motivation scale is of a high quality. No items are biased because the value of p>0.05. For the difficulty level of items, no significant difficulties were found because the respondents were able to differentiate the significance of answer choices for each item. Therefore, the achievement motivation scale instrument is declared to be good and proper in usage for measuring the achievement motivation of senior high school students.

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REFERENCES

[1] A. Hermino and I. Arifin, "Contextual character education for students in the senior high school," *European Journal of Educational Research*, vol. 9, no. 3, pp. 1009–1023, 2020, doi: 10.12973/EU-JER.9.3.1009.

[2] Z. Jiang, Y. Wang, W. Li, K. Z. Peng, and C. H. Wu, "Career proactivity: a bibliometric literature review and a future research agenda," *Applied Psychology*, vol. 72, no. 1, pp. 144–184, Jan. 2023, doi: 10.1111/apps.12442.

[3] M. M. Ibrahim and M. Nat, "Blended learning motivation model for instructors in higher education institutions," *International Journal of Educational Technology in Higher Education*, vol. 16, no. 1, pp. 1–21, 2019, doi: 10.1186/s41239-019-0145-2.

[4] J. Filgona, J. Sakiyo, D. M. Gwany, and A. U. Okoronka, "Motivation in learning," *Asian Journal of Education and Social Studies*, vol. 10, no. 4, pp. 16–37, 2020, doi: 10.9734/ajess/2020/v10i430273.

[5] V. V. Kumar and G. Tankha, "Influence of achievement motivation and psychological adjustment on academic achievement: a cross-sectional study of school students," *Humanities and Social Sciences Reviews*, vol. 8, no. 1, pp. 532–538, 2020, doi: 10.18510/hssr.2020.8165.

[6] R. Steinmayr, A. F. Weidinger, M. Schwinger, and B. Spinath, "The importance of students' motivation for their academic achievement-replicating and extending previous findings," *Frontiers in Psychology*, vol. 10, p. 464340, 2019, doi: 10.3389/fpsyg.2019.01730.

[7] B. D. Wiyono, N. Hidayah, M. Ramli, A. Atmoko, and A. A.-H. Shafie, "Model of solution-focused online counseling (SFOC) to increase student achievement motivation," in *The 1st International Conference on Guidance and Counseling (ICGC)*, 2023, pp. 16–29.

[8] F. Aprilia, N. Lustyantie, and Z. Rafli, "The effect of reading interest and achievement motivation on students' discourse analysis competence," *Journal of Education and e-Learning Research*, vol. 7, no. 4, 2020, doi: 10.20448/journal.509.2020.74.368.372.

[9] B. D. Wiyono, Nurhidayah, M. Ramli, A. Atmoko, and M. A. A.-H. Shafie, "SMIOC strategic model to improve the achievement motivation of students: literature review," in *International Joint Conference on Arts and Humanities 2023 (IJCAH 2023)*, 2023, pp. 1341–1350, doi: 10.2991/978-2-38476-152-4_136.

[10] A. Dagnew, "The relationship between students' attitudes towards school, values of education, achievement motivation and academic achievement in Gondar secondary schools, Ethiopia," *Research in Pedagogy*, vol. 7, no. 2, pp. 30–42, 2017, doi: 10.17810/2015.46.

[11] B. Bukhori, H. Said, T. Wijaya, and F. M. Nor, "The effect of smartphone addiction, achievement motivation, and textbook reading intensity on students' academic achievement," *International Journal of Interactive Mobile Technologies*, vol. 13, no. 9, pp. 66–80, 2019, doi: 10.3991/ijim.v13i09.9566.

[12] F. Wu and W. Fan, "Academic procrastination in linking motivation and achievement-related behaviours: a perspective of expectancy-value theory," *Educational Psychology*, vol. 37, no. 6, pp. 695–711, 2017, doi: 10.1080/01443410.2016.1202901.

[13] S. Z. Akmal, F. Arlinkasari, and A. U. Febriani, "Hope of success and fear of failure predicting academic procrastination students who working on a thesis," *GUIDENA: Jurnal Ilmu Pendidikan, Psikologi, Bimbingan dan Konseling*, vol. 7, no. 1, pp. 78–86, 2017, doi: 10.24127/gdn.v7i1.724.

[14] A. Malkoç and A. K. Mutlu, "Academic self-efficacy and academic procrastination: exploring the mediating role of academic motivation in Turkish university students," *Universal Journal of Educational Research*, vol. 6, no. 10, pp. 2087–2093, 2018, doi: 10.13189/ujer.2018.061005.

[15] M. R. Krou, C. J. Fong, and M. A. Hoff, "Achievement motivation and academic dishonesty: a meta-analytic investigation," *Educational Psychology Review*, vol. 33, no. 2, pp. 427–458, 2021.

[16] K. Muenks, A. Wigfield, and J. S. Eccles, "I can do this! The development and calibration of children's expectations for success and competence beliefs," *Developmental Review*, vol. 48, pp. 24–39, 2018, doi: 10.1016/j.dr.2018.04.001.

[17] B. D. Wiyono, M. Nursalim, T. I. Pratiwi, and M. F. Ilhamuddin, "Evaluation of the quality of counseling services in improving the achievement motivation of senior high school students," in *International Joint Conference on Arts and Humanities 2022 (IJCAH 2022)*, 2023, pp. 1027–1038, doi: 10.2991/978-2-38476-008-4_109.

[18] V. Ramaprabou and S. K. Dash, "Effect of academic stress on achievement," *I-manager's Journal on Educational Psychology*, vol. 11, no. 2, pp. 32–37, 2018.

[19] M. T. Moghadam, E. Abbasi, and Z. Khoshnodifar, "Students' academic burnout in Iranian agricultural higher education system: the mediating role of achievement motivation," *Heliyon*, vol. 6, no. 9, p. e04960, 2020, doi: 10.1016/j.heliyon.2020.e04960.

[20] L. O. Adegboyega, "Influence of achievement motivation on Nigerian undergraduates' attitude towards examination," *International Journal of Instruction*, vol. 11, no. 1, pp. 77–88, 2018, doi: 10.12973/iji.2018.1116a.

[21] A. Atmoko, M. Machfudz, R. Mansur, and A. da Costa, "Motivation contribution to religious learning behavior during the COVID pandemic," *Cakrawala Pendidikan*, vol. 41, no. 1, pp. 271–283, 2022, doi: 10.21831/cp.v41i1.43255.

[22] J. Hindradjat, I. Hambali, A. Atmoko, and P. H. Livana, "The effect of achievement motivation and self-regulated learning on student learning behavior in the time of online learning in Indonesia," *Open Access Macedonian Journal of Medical Sciences*, vol. 10, pp. 262–272, 2022, doi: 10.3889/oamjms.2022.8279.

[23] A. Atmoko, W. N. E. Saputra, I. M. Hambali, and E. T. Wahyuni, "Achievement motivation and learning behavior of students during COVID-19 pandemic: gender differences," *Pegem Egitim ve Ogretim Dergisi*, vol. 12, no. 4, pp. 260–268, 2022, doi: 10.47750/pegegog.12.04.27.

[24] A. Atmoko, M. Pali, and M. Irtadji, "Academic motivation assessment scale to Indonesian student: the confirmation of Lee's theory," *International Journal of Academic Research and Development*, vol. 3, no. 4, pp. 75–78, 2018.

[25] V. Ratnawati, P. Setyosari, M. Ramli, and A. Atmoko, "Development of academic optimism model in learning for junior high school students," *European Journal of Educational Research*, vol. 10, no. 4, p. 1741, 2021, doi: 10.12973/EU-JER.10.4.1741.

[26] B. D. Wiyono, L. Nurhidayah, M. Ramli, and A. Atmoko, "Student achievement motivation scale: hope for success and fear of failure?" in *Reimagining Innovation in Education and Social Sciences*, W. Saroinsong, M. Ashar, I. Maureen, L. Hartanti, M. Anggaryani, and A. G. Titaley, Eds., New York: Routledge, 2023, pp. 252–257, doi: 10.1201/9781003366683-30.

[27] A. Okay and C. Balçıkanlı, "The role of motivation in EFL students' perceptions of teacher/learner responsibilities and learner abilities," *Asian-Pacific Journal of Second and Foreign Language Education*, vol. 2, no. 1, pp. 1–12, 2017, doi: 10.1186/s40862-017-0032-0.

[28] I. Abdullah, B. Hudayana, Setiadi, P. M. Kutanegara, and A. Indiyanto, "Beyond school reach: character education in three schools in Yogyakarta, Indonesia," *Journal of Educational and Social Research*, vol. 9, no. 3, pp. 145–159, 2019, doi: 10.2478/jesr-2019-0032.

[29] A. Atmoko, I. M. Hambali, and M. Barida, "Applying the Rasch model to develop the religious motivation scale for junior high school students in online learning in the new normal era in Indonesia," *Pegem Egitim ve Ogretim Dergisi*, vol. 12, no. 1, pp. 142–148, 2022, doi: 10.47750/pegegog.12.01.13.

[30] D. C. McClelland, *Human motivation*, New York: Cambridge University Press, 1987.
[31] D. C. McClelland and A. S. Alschuler, "Achievement motivation development project," *Quality Assurance Journal*, vol. 7, no. 4, pp. 1–341, 1971.
[32] C. H. Su and C. H. Cheng, "A mobile gamification learning system for improving the learning motivation and achievements," *Journal of Computer Assisted Learning*, vol. 31, no. 3, pp. 268–286, 2015, doi: 10.1111/jcal.12088.
[33] D. A. Cook and A. R. Artino, "Motivation to learn: an overview of contemporary theories," *Medical Education*, vol. 50, no. 10, pp. 997–1014, 2016, doi: 10.1111/medu.13074.
[34] J. C. Chang, Y. T. Wu, and J. N. Ye, "A study of graduate students' achievement motivation, active learning, and active confidence based on relevant research," *Frontiers in Psychology*, vol. 13, p. 915770, 2022, doi: 10.3389/fpsyg.2022.915770.
[35] P. Hernandez-Leal, B. Kartal, and M. E. Taylor, "A survey and critique of multiagent deep reinforcement learning," *Autonomous Agents and Multi-Agent Systems*, vol. 33, no. 6, pp. 750–797, Nov. 2019, doi: 10.1007/s10458-019-09421-1.
[36] Y. D. Puspitarini and M. Hanif, "Using learning media to increase learning motivation in elementary school," *Anatolian Journal of Education*, vol. 4, no. 2, pp. 53–60, 2019, doi: 10.29333/aje.2019.426a.
[37] D. H. Schunk, P. R. Pintrich, and J. L. Meece, *Motivation in education: theory, research, and applications.* Hoboken, New Jersey: Pearson/Merrill Prentice Hall, 2008.
[38] M. M. Schödl, A. Raz, and A. N. Kluger, "On the positive side of avoidance motivation: an increase in avoidance motivation reduces procrastination among students," *Applied Psychology*, vol. 67, no. 4, pp. 655–685, 2018, doi: 10.1111/apps.12147.
[39] S. I Chiu, T. Yen Chen, T. Lang Chang, and C. Yu Chen, "Procrastination, dependence and social loafing: comparison in high/low task visibility between active/passive procrastinators," *International Journal of Psychiatry Research*, vol. 3, no. 2, pp. 1–11, 2020, doi: 10.33425/2641-4317.1058.
[40] A. Saman and H. Wirawan, "Examining the impact of psychological capital on academic achievement and work performance: the roles of procrastination and conscientiousness," *Cogent Psychology*, vol. 8, no. 1, 2021, doi: 10.1080/23311908.2021.1938853.
[41] L. Visser, F. A. J. Korthagen, and J. Schoonenboom, "Differences in learning characteristics between students with high, average, and low levels of academic procrastination: students' views on factors influencing their learning," *Frontiers in Psychology*, vol. 9, p. 00808, 2018, doi: 10.3389/fpsyg.2018.00808.
[42] G. Ocansey, C. Addo, H. K. Onyeaka, J. Andoh-Arthur, and K. O. Asante, "The influence of personality types on academic procrastination among undergraduate students," *International Journal of School and Educational Psychology*, vol. 10, no. 3, pp. 360–367, 2022, doi: 10.1080/21683603.2020.1841051.
[43] R. F. Baumeister, "Longitudinal study of procrastination, performance, stress, and health: the costs and benefits of dawdling," in *Self-Regulation and Self-Control: Selected Works of Roy F. Baumeister*, New York: Routledge, 2018, pp. 299–309.
[44] N. Khattab, "Students' aspirations, expectations and school achievement: what really matters?" *British Educational Research Journal*, vol. 41, no. 5, pp. 731–748, 2015, doi: 10.1002/berj.3171.
[45] N. Rahmatika and Suyatno, "Students' readiness to learn in the a five-day school policy in the public senior high school of Yogyakarta," *Universal Journal of Educational Research*, vol. 8, no. 11, p. 5005, 2020, doi: 10.13189/ujer.2020.081101.
[46] S. Dhawan, "Online learning: a panacea in the time of COVID-19 crisis," *Journal of Educational Technology Systems*, vol. 49, no. 1, pp. 5–22, Sep. 2020, doi: 10.1177/0047239520934018.
[47] C. W. Wang and M. Neihart, "Academic self-concept and academic self-efficacy: self-beliefs enable academic achievement of twice-exceptional students," *Roeper Review*, vol. 37, no. 2, pp. 63–73, 2015, doi: 10.1080/02783193.2015.1008660.
[48] J. Heckhausen and H. Heckhausen, *Motivation and action*, 3rd ed. Cham: Springer International Publishing, 2018, doi: 10.1007/978-3-319-65094-4.
[49] T. G. Bond, Z. Yan, and M. Heene, *Applying the Rasch model*. New York: Routledge, 2020, doi: 10.4324/9780429030499.
[50] J. M. Linacre, *A user's guide to WINSTEP MINISTEP Rasch model computer programme manual 3.67*. Chicago, IL: MESA Press, 2008.
[51] S. T. Hajjar, "Statistical analysis: internal-consistency reliability and construct validity," *International Journal of Quantitative and Qualitative Research Methods*, vol. 6, no. 1, pp. 27–38, 2018.
[52] R. Hidayah, E. Mu'awanah, A. Zamhari, Munardji, and Naqiyah, "Learning worship as a way to improve students' discipline, motivation, and achievement at school," *Journal of Ethnic and Cultural Studies*, vol. 8, no. 3, 2021, doi: 10.29333/ejecs/748.
[53] A. D. Liem and Y. Nie, "Values, achievement goals, and individual-oriented and social-oriented achievement motivations among Chinese and Indonesian secondary school students," *International Journal of Psychology*, vol. 43, no. 5, pp. 898–903, Oct. 2008, doi: 10.1080/00207590701838097.
[54] D. R. Sadler, "The futility of attempting to codify academic achievement standards," *Higher Education*, vol. 67, no. 3, pp. 273–288, 2014, doi: 10.1007/s10734-013-9649-1.
[55] S. A. Irawan, M. I. Pu'adi, S. Silviyanti, T. S. Syafani, and H. Herman, "Motivation of young generation to create a generation of excellent achievement and character in Lampung Province," *International Journal of Social Service and Research*, vol. 3, no. 2, pp. 418–425, 2023, doi: 10.46799/ijssr.v3i2.253.
[56] P. Mahdavi, A. Valibeygi, M. Moradi, and S. Sadeghi, "Relationship between achievement motivation, mental health and academic success in University Students," *International Quarterly of Community Health Education*, vol. 43, no. 3, pp. 311–317, 2021, doi: 10.1177/0272684X211025932.
[57] S. Altikulaç, T. W. P. Janssen, J. Yu, S. Nieuwenhuis, and N. M. van Atteveldt, "Mindset profiles of secondary school students: associations with academic achievement, motivation and school burnout symptoms," *British Journal of Educational Psychology*, vol. 94, no. 3, pp. 738–758, 2024, doi: 10.1111/bjep.12676.
[58] B. Sumintono and W. Widhiarso, *Application of Rasch model for social science research (Revised)*. Cimahi: Trim Komunikata Publishing House (in Indonesian), 2014
[59] A. R. A. Hamouda and M. B. S. Diwa, "Level of achievement motivation among secondary school students in the light of some variables," *International Journal of Childhood, Counselling & Special Education (CCSE)*, vol. 4, no. 3, pp. 68–81, 2022, doi: 10.31559/ccse2022.4.3.2.
[60] M.-T. Wang, J. Guo, and J. L. Degol, "The role of sociocultural factors in student achievement motivation: a cross-cultural review," *Adolescent Research Review*, vol. 5, no. 4, pp. 435–450, 2020, doi: 10.1007/s40894-019-00124-y.
[61] Tanti, Maison, B. Syefrinando, M. Daryanto, and H. Salma, "Students' self-regulation and motivation in learning science," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 9, no. 4, pp. 865–873, Dec. 2020, doi: 10.11591/ijere.v9i4.20657.
[62] B. Cetin, "Academic motivation and self-regulated learning in predicting academic achievement in college," *Journal of International Education Research (JIER)*, vol. 11, no. 2, pp. 95–106, 2015, doi: 10.19030/jier.v11i2.9190.

[63] M. Baars, L. Wijnia, and F. Paas, "The association between motivation, affect, and self-regulated learning when solving problems," *Frontiers in Psychology*, vol. 8, p. 01346, 2017, doi: 10.3389/fpsyg.2017.01346.
[64] M. Alafgani and E. Purwandari, "Self-efficacy, academic motivation, self-regulated learning and academic achievement," *Jurnal Psikologi Pendidikan Dan Konseling*, vol. 5, no. 2, pp. 104–111, 2019.

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