

Internal Structure of Adolescents' School Motivation Measuring Tool

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Abstract

The main aim of this study was to examine the internal structure of a self-developed instrument “the adolescents’ school motivation measuring tool” instrument for use of adolescent school. Exploratory quantitative research approach, and its design was grounded within the exploratory type. A total of 489 school-going adolescents completed the questionnaire. A principal component factor analysis with varimax rotation confirmed the four-factor structure of the adolescents’ school motivation measurement tool, while confirmatory factor analysis was performed to establish the appropriateness of the instrument. The findings established that each of the factors, had good internal reliability values 0.88%, 0.87%, 0.87%, and 0.81% respectively. The SEM model of school motivation confirmed that the factor structure was a good model as the RMSEA ($p = 0.066$) was significant at a high level. Further, it was also affirmed that inter-correlations existed among each of the components: cognitive and success motivation ($r = 0.95$); cognitive and social motivation ($r = 0.73$); and success and social motivation ($r = 0.73$). Low correlation existed between the components

of social and failure avoidance motivation ($r = 0.03$). This study concluded that the four factors are appropriate measures of adolescents' school motivation tool for the use of school-going adolescents.
Keywords: adolescent, cognitive motivation, failure avoidance motivation, social motivation, success motivation.

Внутренняя структура инструмента измерения школьной мотивации подростков

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Аннотация

Основной целью данного исследования было исследование внутренней структуры самостоятельно разработанного «Инструмента измерения школьной мотивации подростков», предназначенного для использования в подростковой школе. В исследовании использовался экспериментальный количественный подход, а его дизайн был обоснован в рамках экспериментального типа. Анкету заполнили 489 подростков, посещающих школу. Факторный анализ главных

компонентов с варимакс-вращением подтвердил четырехфакторную структуру инструмента измерения школьной мотивации подростков, а для определения адекватности инструмента был проведен подтверждающий факторный анализ. Результаты показали, что каждый из факторов имеет хорошие значения внутренней надежности: 0,88 %, 0,87 %, 0,87 % и 0,81 % соответственно. SEM-модель школьной мотивации подтвердила, что факторная структура является хорошей моделью, так как RMSEA ($p = 0,066$) был значимым на высоком уровне. Кроме того, было подтверждено наличие интеркорреляций между каждым из компонентов: когнитивная мотивация и мотивация успеха ($r = 0,95$); когнитивная мотивация и социальная мотивация ($r = 0,73$); мотивация успеха и социальная мотивация ($r = 0,73$). Низкая корреляция существовала между компонентами социальной мотивации и мотивации избегания неудач ($r = 0,03$). В результате исследования был сделан вывод о том, что четыре фактора являются подходящим инструментом измерения школьной мотивации подростков для использования в работе с учащимися школ.

Ключевые слова: мотивация успеха, социальная мотивация, мотивация избегания неудач, когнитивная мотивация.

Introduction

Previously, the concept of school motivation was limited to motivation to learn about science (science motivation), with the science motivation questionnaire often used to measure it (Glynn et al., 2011; Schumm & Bogner, 2016). Recently, in a bid to reformulate the science-focused school motivation scale, Conradt and Bogner (2022) developed a general school motivation measure, with the aim of providing information on students' motivational aspects that help them to overcome barriers to learning. The authors focused on the four factors or structures of school motivation, namely self-efficacy, self-determination, intrinsic motivation, and grade motivation. Schumm and Bogner (2016) worded their science motivation scale for use by secondary school students and established its application after paraphrasing it. Conradt and Bogner (2022) hypothesised the adaption of the science motivation questionnaire to create their general school motivation questionnaire. However, merely paraphrasing the science motivational scale may not justify its applicability to non-science students sufficiently.

Motivation is described as the psychological and physiological processes responsible for activating, sustaining and cessation of behaviours, as well as the aversive or appetitive value given to the phenomenon on which the behaviour is exhibited (Ardeleanu et al., 2006). In the view of Seel (2011), motivation is considered as the process that predicts the initiation, persistence and intensity of behaviours required to achieve an individual's set goal. Other scholars such as Wentzel (2012) and Wentzel and Wigfield (2009) aver that motivation is a set of beliefs that drive and sustain behaviour. Motivation can be said to explain the behaviours of an individual in specific ways (Amrai et al., 2011). Therefore, a motivated person can be considered to be energetic and focused (Steinmayr et al., 2019). Motivation is an important precursor to learning and success in school (Wigfield et al., 2006). Following the self-determination theory (STD) of Deci and Ryan (2013), school motivation can be described as the cognitive and behavioural drive to achieve academic success. School motivation in this context can be understood as the school going adolescents' psychological process which involves appearance and involvement in all learning activities and their desire to achieve success.

Given that motivation comprises both intrinsic and extrinsic behaviours which are connected to individual success and wellbeing, it involves achievement motives, adaptability, goals, learning engagement, reasons for studying, resilience, perceived learning value, self-efficacy, and self-regulation capability (Kotera et al., 2021). These attributes are rooted in the self-determination theory (SDT) postulated by Deci and Ryan (2013). The theory describes motivation as having extrinsic, intrinsic, or amotivation attributes. Extrinsic attributes are external drivers such as social pressure or high grades,

while intrinsic attributes are internal self-satisfying and fulfilling drivers. Amotivation refers to a lack of motivation (Deci & Ryan, 2013). Intrinsic motivation is more positive and autonomous than the other attributes, and these attributes are not exclusive motivational states; instead, they exist on a self-determined continuum (Fong, 2022). Kotera, Conway and Van Gordon (2019) opine that intrinsically motivated students usually demonstrate a high level of motivation for schooling and display higher subjective wellbeing, whereas extrinsically motivated students demonstrate low interest in schooling (Bailey & Phillips, 2016). Amotivation, on the other hand, is explained as a situation where a student is simply unmotivated, and this is related to poor mental health (Bailey & Phillips, 2016). This present study's model of adolescents' school motivation is also grounded on Deci and Ryan's (2013) self-determination theory. In this study, four motivational components are essential, namely cognitive, success, social and failure avoidance motivation, and these are components of both intrinsic and extrinsic motivation attributes.

Factors of school motivation

Cognitive motivation

The cognitive components of the school motivation scale consist of the students' attributes of seeking mastery, acquiring new knowledge, being interested in solving complex problems, and being interested in complex school subjects. The inclusion of the cognitive attribute in the school motivation scale is premised on the assumption that cognitive ability is critical to the attainment of the sustainable development of societies and is a requirement for the next generation of youths who need to be able to solve complex social problems in the 21st century. Evidence abounds that there is correlation among emotional promoters, logical thinking, imagination, and cognitive stimuli (Abdulla et al., 2018). Lubart and Guignard (2004) state that cognitive and specific skills are required to perform creative work. This justifies the fact that the cognitive attribute fuels school motivation, and individual schoolgoing adolescents with the cognitive attribute will be motivated to solve complex problems and be interested in acquiring new knowledge. According to the SDT, this is intrinsic behaviour (Ryan & Deci, 2020).

Success motivation

The second component of school motivation that was under consideration in this study was success motivation. Eccles and Wigfield (2020) opine that success expectancy is the belief of an individual about how well they will perform in a future task. Past studies have established that the success expectancy attribute energises and motivates an individual to perform a task, improves an individual's confidence, and increases their engagement and performance (Feldon et al., 2019; Schunk & DiBenedetto, 2020, Ryan & Deci, 2017; 2020). Success expectancy domiciles in extrinsic behaviour and is driven by external factors such as grades and socioeconomic values. This study hypothesised that success expectancy would predict the school motivation of schoolgoing adolescents. That is, that an individual adolescent who was success driven would likely be motivated towards schooling.

Social motivation

The social attribute was another component of school motivation that was considered in this study. The social aspect of motivation is believed to influence people's desirable outcomes since it includes modelling, relatedness, and social comparisons (Hattie, Hodis & Kang, 2020). The social attribute explains the feeling of being connected or related to socially accepted values as well as to loved ones and is based on observations of models and other experiences (Ryan & Deci, 2020; Schunk & DiBenedetto, 2020). Although there

is a paucity of research that focuses on the link between the social attribute and school motivation, Hattie et al. (2020) suggest that more attention is needed on the social aspect of school motivation. This social aspect involves belongingness, social affiliation, social assistance, social approval, pro-social activities, social attractiveness, social solidarity, social power, social responsibility, and social status goals in classrooms (Watkins & Hattie, 2012). Socially motivated adolescents are expected to perceive schooling as their duty to society, as a way to access or take part in social events, and as a way to connect with friends at school.

Avoidance of failure

Avoidance of failure or failure avoidance was the last school motivation parameter that was of interest in this study. Failure avoidance is considered an attribute that involves a fear of failing and a dislike of evaluative events (Heimerdinger & Hinsz, 2008). That is, an individual with a high level of failure avoidance has an increased motivation to avoid failure, such that if there is the possibility of failing a task, avoiding such task will be perceived as important. Early motivation research concentrated on approach motivation, with limited attention paid to avoidance motivation. While the former explains an individual's behaviour orientation shaped towards positive outcomes or the desire to succeed, the latter is directed towards negative outcomes. Hence, the chances of an adolescent with failure avoidance traits being motivated towards schooling are likely to be very low (Heggstad & Kanfer, 2000). We were specifically interested in failure avoidance traits because adolescents' motivation towards schooling could be connected to examination anxiety, performance worry, and/or fear of failure. Also, there was scanty empirical evidence on failure avoidance motivation as a component of the adolescent school motivation.

Current study

The authors recognize the significance of scale development and validation, encompassing several crucial processes (Badenes-Ribera et al., 2020; Boateng et al. 2018). According to Boateng and colleagues (2018), three phase of scale development was identified that span through nine steps. During the initial phase, items are generated, and their content validity is evaluated. Moving into the second phase, the scale is crafted, involving steps such as pre-testing questions, survey administration, item reduction, and an examination of the scale's factor structure using confirmatory factor analysis (CFA). CFA provides a more comprehensive evaluation of the construct validity of the instrument, scrutinizing relationships between items and latent constructs and establishing convergent and discriminant validities (Prudon, 2015). CFA specifically aims to assess the underlying factor structure of a measurement instrument, confirming that items within the instrument indeed load onto the expected factors or constructs (Prudon, 2015; Wetzel, 2012). In the third and final phase, scale evaluation takes place, encompassing tests on the number of dimensions, reliability, and validity. However, it is crucial to note that the authors' intent in this study is not to validate adolescents' school motivation scale through the aforementioned process. Instead, their goal is to establish the internal consistency of the Adolescents' School Motivation Scale ensuring that the items measure what they intend to in this context "the identification of school motivation in Kazakhstani young people" and to determine if there is any correlation between the four factors of adolescents' school motivation schools.

In our search for a measurement tool for adolescents' school motivation that is compatible with the uniqueness of Kazakhstani youth, the authors developed a component of the school motivation scale. Our research questions were two-fold:

Does adolescent school motivation measuring tool possess the required internal structure for the used secondary school student?

Was there any correlation between the four factors of adolescents' school motivation?

Methodology

The study design was a quantitative research approach rooted within an instrumental design. This design falls within the descriptive study design. A study is instrumental when it is focused on developing new or modifying old items (International Centre for Educational Evaluation, 1982). The participants were 489 students who completed the ASMMI. The gender distribution was 58.4% female and 41.6% male. The mean age was 14.82 years, with a standard deviation of 1.209.

A self-report adolescents' school motivation measuring tool was developed by the authors. The questionnaire initially comprised of 80 items, with each of the components having 20 items each in a 5-point Likert response format ranging from: 1 = "never true about me"; 2 = "rarely true about me"; 3 = "sometimes true about me"; 4 = "often true about me"; and 5 = "always describes me very well". The items represented four components (cognitive, success, social and failure avoidance) or traits of motivated individuals, as explained earlier. Following factor loading, 45 items that rotated above 0.50 were retained. The cognitive component thus had 11 items, success had 10 items, the social component had 11 items, and failure avoidance had 13 items respectively.

Ethical Approval

Ethical clearance was granted by relevant research institutions. The authors adhered to all the terms as contained in the institutional guidelines and in accordance with the international ethics of research as applicable to human participants. The principles of the schools were notified of the study and their permission was sought. The authors then sent the Informed Consent Form requesting the parents/guardians' signatures of consent to the students' parents/guardians a week before distributing the questionnaires. The parents/guardians were assured that the information gathered would be used for research purposes only. The participants were assured of the confidentiality of the information provided. Participants were informed that there were no right or wrong answers as their responses were expressions of their perceived potential. The authors also assured the participants that the information gathered would be used for research purposes only. The data collection spanned from September 2022 to March 2023, covering a period of six months.

The data collected was entered into the IBM SPSS Statistics 26.0 and AMOS 26.0 software and analysed. Factor analysis was performed using the Confirmatory factor analysis (CFA), the Promax oblique rotation, and the unweighted least squares estimation methods. The justification for the choice of this methodology was the need to ascertain if the items in each latent factor were true measures of adolescents' school motivation, and because the scale was a new one and thus had no theoretical factor model (Nunnally & Bernstein, 1994). The following criteria were used for factor retention: the Guttman-Kaiser criterion, with a factor saturation of higher than 0.50; parallel analysis; interpretability criteria; and scree plots. The Cronbach's alpha coefficient was used to measure the internal consistency. Structural equation model (SEM) analysis was performed to confirm the relationships between the motivation subscales. The maximum likelihood of estimation discrepancy was applied, while the goodness of the fit of the models was based on the Chi-square test. Some argue that a Chi-square result of ≤ 2 is an acceptable good fit (Ullman, 2006). Some like Kline (1998) say that ≤ 3 is acceptable, while other researchers such as Schumacker and Lomax (2004) allow values as high as 5 to indicate that a model is an

adequate fit. Technically there is no consensus on the acceptable cut-off value for the Chi-square, except that it should not be significant ($p > 0.05$) (Byrne, 2013). A root mean square error of approximation (RMSEA) result of $\leq .06$ is an acceptable cut-off for a good model fit (Hu & Bentler, 1999). When looking at other acceptable test indices such as the goodness of fit index (GFI), the average goodness of fit index (AGFI), the Tucker-Lewis index (TLI), and the comparative fit index (CFI), the acceptable baseline is >0.90 , but it is better at >0.95 for a more reasonable fit.

Findings

The aim of the study was to establish the adolescents' school motivation instrument's internal structure for measuring their motivation and to confirm the internal structure of the instrument. The results were interpreted to determine if they satisfied the assumptions about the factors' structures and to confirm the internal structure of the newly developed ASMMI. Table 1 shows that the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity were used to test the suitability of the data for exploratory factor analysis. A KMO value of 0.926 and a Bartlett's test of sphericity result of $\chi^2 = 16061.022$, $p < 0.01$ indicated that the data was adequate for factor analysis.

Table 1. Showing the measures of simple adequacy using the KMO and Bartlett's test

Kaiser-Mayer-Olkin measure of sampling adequacy		.926
Bartlett's test of sphericity	Approx. Chi-square	16061.022
	Df	3160
	Sig.	.000

As seen in Table 1 depicting the fitness of the scale, Bartlett's test of sphericity was significant. This implied good factorability potential. This exploratory analysis was used on the 80 items to identify a succinct set of factors and to assess the construct internal structure of the scale using principal axis factoring with varimax rotation. A total of 35 items were dropped due to low loadings or cross-loadings, while 45 items that rotated above 0.50 were retained as presented in Table 2.

The Guttman-Kaiser criterion (eigenvalues greater than 1 were retained) and a scree plot test were conducted in order to "clean the model up". When determining the number of factors to be retained in the scale, the eigenvalues are used to derive factor loadings, which indicate how strongly certain items are associated with certain factors. Loadings of less than 0.30 are usually considered weak. All factor loadings showed values higher than 0.5 for their main factor (see Figure 1).

Confirmatory factor analysis (CFA) was carried out using structural equation modelling (SEM) in order to confirm the internal structure of the measurement. The result showed that the Chi-squared was equal to 3, which was acceptable but not significant ($\chi^2 = 3.099$; $df = 96$; $p = 0.01$). This meant that the model was a reasonable fit. The measurement model fit indices revealed that only the RMSEA ($p = 0.066$) fell within the acceptable baseline of <0.08 , which implied a good fit of the model. Other measurements of the model fit indices did not meet the acceptable statistical conditions of a good model fit (GFI = 0.765; AGFI = 0.741; RMR = .122; TLI = 0.662; CFI = 0.680). It was assumed that the GFI and AGFI tests were not more preferred indices of the goodness-of-fit since they could yield meaningless negative values (Shadfar & Malekmohammadi, 2013).

Table 2. *Rotated Component Matrix*

S/N	Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	CM19	.713																		
2	SM10	.709																		
3	SM11	.662																		
4	SM14	.631																		
5	SM18	.614																		
6	CM20	.602																		
7	CM18	.565																		
8	SM20	.564																		
9	CM17	.544																		
10	FA10		.742																	
11	FA13		.707																	
12	FA11		.586																	
13	FA18		.546																	
14	CM3			.665																
15	CM2			.647																
16	CM4			.552																
17	CM5			.535																
18	SOC12				.798															
19	SOC10				.756															
20	SOC11				.691															
21	SM17				.558															
22	SOC8					.735														
23	SOC9					.655														
24	CM12					.508														
25	SOC6						.731													
26	SOC18						.634													
27	SM15						.542													
28	FA5							.638												
29	FA3							.582												
30	FA7							.513												
31	FA12							.504												
32	SOC2								.655											
33	SOC1								.549											
34	SOC3								.512											
35	CM15									.673										
36	FA9										-.672									
37	FA17											.670								
38	SM6												.628							
39	CM9													.674						
40	SM12														.672					
41	FA14															.721				
42	SM19																.746			
43	SOC5																	.562		
44	FA2																		.590	
45	FA4																			.764

The inter-correlation among each component of adolescents' school motivation was examined further, and table 2 reveals that there was a close, strong correlation between cognitive motivation and success motivation ($r=0.95$), which meant that some items were closely related with each other. Cognitive motivation was found to have the strongest relationship with success motivation. This was followed by cognitive motivation and social motivation ($r=0.73$). Success motivation and social motivation ($r=0.73$) had an equal relationship, followed by social motivation and failure avoidance motivation which had a very low ($r=0.03$) correlation. However, cognitive motivation and failure avoidance motivation showed a negative correlation ($r= -0.15$), as did failure avoidance with success motivation ($r=-0.19$), which implied that the items showed divergent correlations with social, success and failure avoidance motivation.

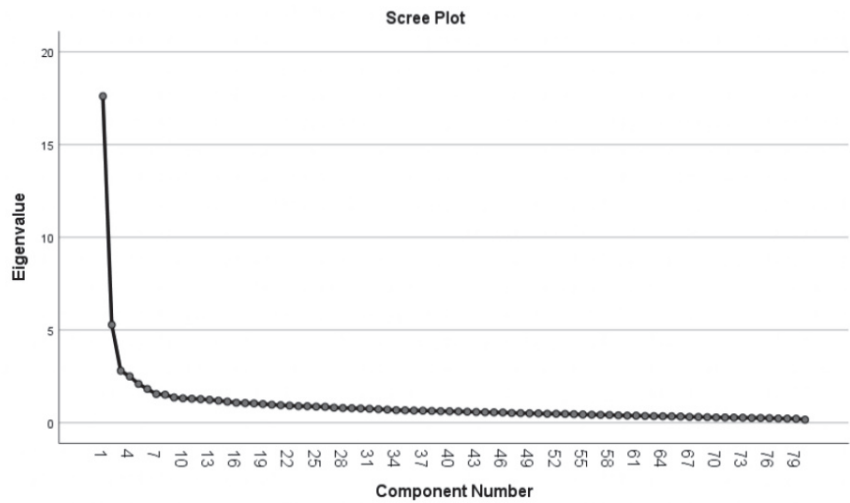


Figure 1: scree plot

Figure 1: Showing the study model and screen plot

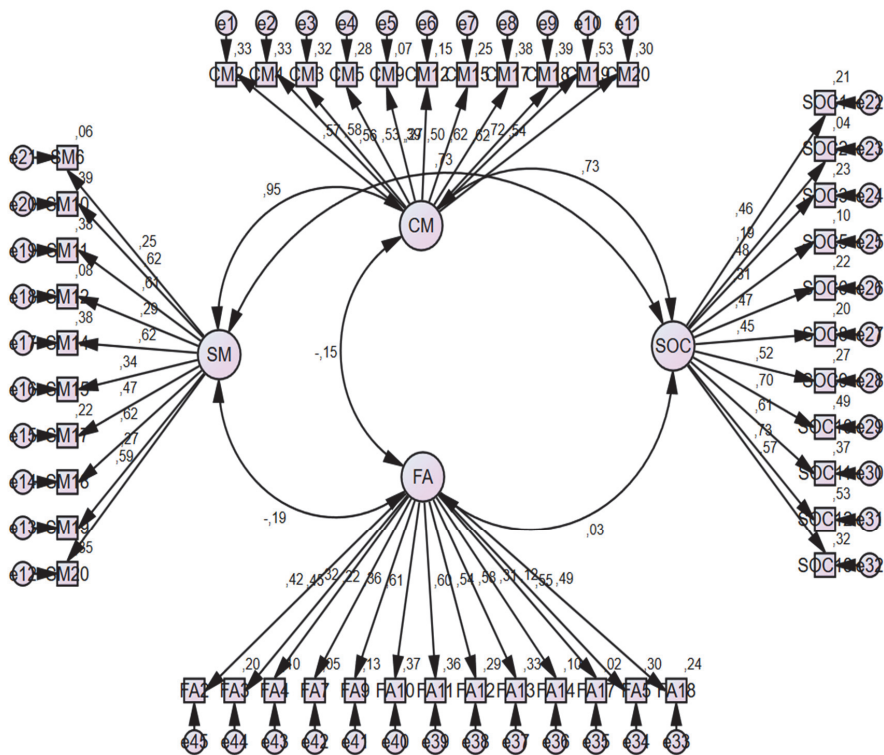


Figure 2: Adolescents' school motivation model

Discussion

This study assessed the component structure of the adolescents' school motivation questionnaire after the events of the COVID-19 pandemic that led to a shift in all facets of life including social, economic, as well as education activities. Findings from the confirmatory factorial analysis carried out showed that the four-component structure (cognitive, success, social and failure avoidance motivation) of the measurement was valid and reasonably fit to assess the school motivation levels of unmotivated adolescents. This addressed the concern of the first research question, which was to establish internal consistency and confirm the structure of the school motivation questionnaire for students. The findings justified each component evaluated by the ASMMI, that represented four factors and indicated the four-dimensional structure of the questionnaire. This factor solution substantiated the expanded general school motivation questionnaire's construct, which focused not only on science motivation but also encompassed non-science aspects such as cognitive, success, social and failure avoidance attributes. This finding was supported by past studies on the need to develop a general school motivation measure since the existing school motivation measure was limited to science students' motivation only (Byrne, 2013; Conradt & Bogner, 2022; Glynn et al., 2011; Hu & Bentler, 1999; Schumm & Bogner, 2016; Shadfar & Malekmohammadi, 2013). Although there are differences of opinion regarding the acceptable cut-off values when testing Chi-squares in a model (Byrne, 2013).

Motivation plays a significant role in the realisation of healthy societies and future sustainable development, a skill that is essential in developing the next generation of young people who can deal with complex social challenges and ensure healthy societies (Mngomezulu et al., 2021). Education stakeholders need to understand the nature of adolescents' lack of motivation to respond adequately to current and future challenges, and provide the support necessary for building resilience. The current researchers sought to identify an appropriate tool with which to assess motivation at school and identified the ASMMI as suitable. They launched the ASMMI in the post-pandemic era to identify unmotivated students, so as to provide motivating environments for the achievement of academic success. The findings of this study substantiated the self-determination theory of motivation adopted in this study. The theory states that motivation comprises of extrinsic, intrinsic and amotivation attributes (Deci & Ryan, 2013; Fong, 2022; Kotera et al., 2019). The four components of school motivation considered in this study were rooted deeply in the intrinsic as well as extrinsic motivation attributes of the adolescents.

The study established that intercorrelation existed among the components of the hypothesised adolescents' school motivation factors. The role of social motivation was evident by its correlation with cognitive motivation in this study. Success motivation also correlated strongly with cognitive motivation. The relationship between social motivation and cognitive motivation in this study may be attributed to the distinction between cognitive motivation, which is typically regarded as an inherent quality, and success, which is often perceived as an external factor (Eccles & Wigfield, 2020). The interrelationship explains the fact that school motivation could be influenced by both intrinsic and extrinsic drivers. This finding gives credence to past studies that established success expectancy as an extrinsic attribute driven by external factors such as grades and socioeconomic values, while cognitive motivation is attributed to energy that motivates, improves individuals' confidence, and increases engagement and performance (Feldon et al., 2019; Schunk & DiBenedetto, 2020; Ryan & Deci, 2017; 2020).

The social and success components of the ASMQ had equal inter-correlation with cognitive motivation, while failure avoidance had low inter-correlation with cognitive, social and success motivation. In this case, grade motivation became an extrinsic factor

of motivation influenced by social factors. This finding supports the position of other studies that claim that the social aspect of motivation involves belongingness, social affiliation, social assistance, social approval, prosocial behaviour, social attractiveness, social solidarity, social power, social responsibility, and the social status needed for goals achievement (Conradty & Bogner, 2022; Hattie et al., 2020; Heimerdinger & Hinsz, 2008; Watkins & Hattie, 2012).

Conclusion

Twenty-first century society in the post-pandemic era requires young people who are not only academically excellent but also socially motivated and success driven. The need for the next generation to be equipped with both cognitive and social competencies in order to face the challenges of a sustainable healthy society cannot be overemphasised. The measuring tool developed in this study for the assessment of school motivation will be a great asset for use to identify and equip cognitively and socially motivated young people for the achievement of this goal. The present study confirmed the ASMMI as an assessment tool for use in addition to the science motivation and general school motivation tests that emphasise science orientation and self-efficacy for learning motivation.

Of particular importance in this study's findings was the relationship between the success component (which reported the strongest inter-correlation) and cognitive motivation. This was followed by the correlation between the cognitive and social components. Failure avoidance, on the other hand, correlated negatively with the components of self-efficacy and creativity. The results indicated that promoting success also supported cognitive and social motivation, resulting in the school readiness of adolescents. The study's findings established that the ASMMI was a good fit as a model for school going adolescents who could be discouraged and have lost motivation to learn while exhibiting failure avoidance behaviour. Given these findings, it is evident that the responsibility for enhancing success and the cognitive and social mindset of adolescents' rests with all educational stakeholders, and not just with teachers alone. It is fundamental to mention that further investigation of the instrument's validity is necessary to assess its accuracy and convergent and discriminant validities. The lack of these results may serve as a limitation to the generalizability of this study. Future studies should therefore consider this shortcoming.

This present study considered cognitive, success, social and failure avoidance motivation as the components of school motivation. The authors recognise that there could be other indicators for school motivation, such as individuals' career motivation, self-efficacy, and personality, and the school environment itself. These factors could perhaps be considered by future researchers, and this shortcoming could serve as a limitation to the generalizability of this study. Future studies could focus on appropriate interventions to enhance adolescents' cognitive, social and success competencies. The effects of the intervention could be assessed using the new ASMMI developed in this study.

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Conflict of Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Informed Consent

Prior to the administration of questionnaire, the authors ensured the students were given the Informed Consent Form requesting their parents/guardians' signatures of consent to the students' parents/guardians a week before distributing the questionnaires. The parents/guardians were assured that the information gathered would be used for research purposes only. Only those whose informed consent forms were signed and returned were allowed to participate in the study.

Data availability

The datasets generated and/or analysed during the present study are available from the corresponding author upon reasonable request.

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Appendix

School Motivation Questionnaire

Full name _____
 school _____ class _____
 Age _____ (years) _____ (Male/Female)
 Nationality _____ Date of completion _____

Keys:

On the submitted form, in the line with the statement, mark one of the numbers from 1 to 5 (point), which have the following interpretation: score –
 low value of manifestation of quality
 point - a manifestation of quality below average
 points - the average value of the manifestation of quality
 points - manifestation of quality above average
 points - a pronounced manifestation of quality

№	Cognitive motivation	Score
	During my studies, I master new skills.	
	Learning new material allows me to develop new skills	
	Studying at school allows me to gain deep knowledge	
	Studying at school allows me to expand my horizons	
	I like to acquire knowledge on my own	
	I follow the classes of famous teachers on social networks	
	I need to know the essence of phenomena, their origin	
	I study to understand the cause and effect relationships of patterns	
	I am interested in the general principles of phenomena operating in various conditions	
	I am interested in complex topics in school subjects	
	I like to solve complex problems that my classmates can't handle	
	Success Motivation	
	I always belief I can earn grade of A	
	The more difficult the exercise, the more confident I am to perform well.	
	For myself, I belief in achieving hard tasks.	
	I am always responsible for my grades.	
	Study makes me competitive	
	I am optimistic about excelling in future tasks	
	I belief if one works hard, one can succeed	
	When solving complex problems, I take the initiative	
	I objective criticism addressed to me	
	If I get a bad grade, then it makes me study herder and search for the correct answers.	
	Social Motivation	

№	<i>Cognitive motivation</i>	<i>Score</i>
	In the classroom, I want to meet the teacher's general learning requirements	
	I study because it is important for my parents	
	Studying well is the duty of every student to society	
	I like studying because I have many friends at school	
	When I study, I like to get good grades.	
	I like to take part in the social life of the school	
	Schooling will make me to take part in social events	
	If I study well, I will have a prosperous life	
	A good study guarantees me admission to the university	
	If I study well, I will earn good money in the future	
	At school, I want the teacher to speak positively about me	
	Failure avoidance Motivation	
	If I can't solve a problem, I immediately lose interest in it.	
	I'm afraid of criticism	
	I believe that it is impossible to succeed in all subjects	
	School makes me afraid	
	I don't enjoy my schooling	
	Studying at school weighs me down	
	I experience academic failure more often than success	
	It can be said about me that unfortunate circumstances haunt me through life	
	At school, I am overcome with despair and loss of strength when I do not know the answer to questions	
	I will not be able to achieve high results in my studies	
	If I can't solve a problem, the circumstances are to blame	
	I prefer to set easy or slightly difficult goals.	
	I am always pessimistic when solving problems.	