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EDITED BY

Sipho Dlamini,
University of Johannesburg, South Africa

REVIEWED BY

Mahmoud Patel,
University of the Western Cape, South Africa
Adane Hailu Herut,
Dilla University, Ethiopia

*CORRESPONDENCE

Nonhlanhla Masinga
✉ masinn1@unisa.ac.za

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Navigating aspirations: the role of self-concept in shaping academic performance among diverse adolescents

Nonhlanhla Masinga*

Department of Psychology, School of Social Sciences, College of Human Sciences, University of South Africa, Pretoria, South Africa

This manuscript investigates the relationship between adolescents' aspirations and academic performance, focusing on self-concept dimensions such as self-esteem, self-efficacy, and self-regulation. Using empirical data and a longitudinal design, the study examines how these elements of self-concept mediate the link between aspirations and academic success, with particular attention to adolescents from diverse socio-economic and cultural backgrounds in South Africa. Although the research is situated in a historically racialized educational system, the findings reveal that socio-economic disparities, rather than race alone, are key drivers of educational outcomes. By applying the lens of critical racial consciousness, this study highlights how systemic inequalities in schooling contexts interact with psychological factors to influence learner development. Findings showed that self-regulation, academic self-efficacy, and self-esteem were positively linked to performance. In addition, systemic inequalities such as resource deprivation, underfunding and curriculum marginalisation restricted students' possibilities. The manuscript offers actionable insights for educators and policymakers by advocating for interventions that support self-concept development in under-resourced environments. It argues that fostering self-efficacy, self-regulation, and self-esteem is essential for enabling students to bridge the aspiration-attainment gap. Through the lens of critical racial consciousness, the manuscript contributes to the discourse on educational psychology and adolescent development by emphasizing the need for targeted interventions that consider the structural and social determinants shaping youth aspirations and achievement.

KEYWORDS

adolescents, aspirations, critical racial consciousness, longitudinal study, self-concept, socio-economic inequality, South Africa

1 Introduction

Adolescence is a formative period during which individuals develop goals and aspirations that shape their identity and future trajectories (Baqoyeva, 2025; Crockett and Crouter, 2014). Adolescent aspirations, conceptualized here as possible selves, are influenced by education. Adolescents' thinking is shaped in a school environment where most of their development takes place. Education is regarded as one of the most crucial factors in reducing poverty and inequality, enhancing economic growth, reducing unemployment and improving well-being (Mlachila and Moeletsi, 2019; World Bank, 2018). However, a gap exists between the envisioned education and the actual education received (Spaull, 2013; Van Jaarsveld and Van Der Walt, 2018), also known as the aspiration-attainment gap (Oyserman, 2015b).

The aspiration-attainment gap refers to the difference between what youth hope to achieve or aspire and what they actually attain over time. In other words, although many young people envision high academic and career achievement, systemic barriers and contextual factors often

prevent them from fulfilling these aspirations. This results in underachievement and reinforces existing inequalities, especially in under-resourced contexts. As indicated, this gap is evident at several levels, including policy, school governance, curriculum delivery, and student's academic outcomes.

At the policy level, the post-apartheid South African government devotes nearly 20% of the national budget to address historical educational inequalities (Statistics South Africa [Stats SA], 2023). However, the dropout rate of high school students is substantial, at almost 50% (Spaull, 2015; Van der Berg et al., 2019; Van Wyk, 2015). Additionally, there are large racial inequalities in matric attainment (Spaull, 2015), especially in historically Black and Colored schools (Hartnack, 2017; Naidu, 2022).

In terms of school governance, South African schools are sometimes described as being in *crisis* (BusinessTech, 2022; Fleisch, 2008; Jansen, 2017; Modisaotsile, 2012; Roodt, 2018) and *dysfunctional* (Bloch, 2009; Letseka, 2014; Moloi, 2019; Pretorius, 2014; Taylor, 2006). According to the National Education Infrastructure Management System [NEIMS], (2021), schools are under-resourced, have faulty construction and often lack adequate electricity, water, sanitation and fencing.

For various reasons, curriculum delivery is rarely achieved in South African schools (Chaudhary, 2015; Mamabolo, 2021; Naaman, 2017). There is a shortage of teachers in classrooms leading to a high pupil-teacher ratio (Case and Yogo, 1999; Kimani, 2022). In rural community schools, many teachers are unqualified, often possessing only a matric while enrolled in, but not yet having completed, a tertiary qualification (Savides, 2017).

In terms of students' achievement, few students who complete matric qualify to enter university, and those who do often leave before completing their programs or take longer to finish their degrees (Council on Higher Education [CHE], 2013; Letseka and Maile, 2008; Makoni, 2017; Thomas and Maree, 2022). Persistent differences in academic achievement are rooted in the enduring legacy of educational disparities under apartheid, which continue to disadvantage students, especially Black students (Fiske and Ladd, 2004; Gore, 2021). These differences are evident between students from predominantly segregated schools, which are dominated by the majority ethnic group, Black people, and are located in poor township communities. This educational inequality is further reflected in the distribution of resources across schools.

2 The South African schooling system

South African public schools are funded through a quintile system, which classifies schools based on the poverty level of the surrounding community and the quality of the school's infrastructure (Mestry, 2018). The system ranks schools into five quintiles, with Quintiles 1 to 3 representing schools in the most socio-economically disadvantaged areas and Quintiles 4 and 5 representing schools in better resourced communities (Van Dyk and White, 2019). Schools in Quintiles 1–3 receive the highest funding per student and are designated as no-fee schools, while those in Quintiles 4–5 receive less government funding and are considered fee-paying schools (Department of Basic Education, 2022; Mestry, 2018).

This classification system reflects broader socio-economic inequalities and has important implications for students' educational

experiences. Students in lower-quintile schools often face overcrowded classrooms, underqualified teachers, limited access to resources such as libraries and laboratories, and poor infrastructure. These inequalities significantly affect their academic engagement, self-concept, and future aspirations. In contrast, students in higher quintile schools, typically located in suburban areas, are more likely to benefit from well-maintained facilities, access to technology, and additional private funding, which can foster a more supportive learning environment and better academic outcomes.

3 Problem statement

While prior research has established a connection between aspirations and academic achievement, less is known about the role of self-concept in mediating this relationship. Specifically, the influence of psychological factors such as self-regulation, self-efficacy, and self-esteem, within the context of historical social and structural inequality and educational disparity, as experienced in South Africa, remains underexplored.

To support the study, the following objectives were outlined:

1. To examine the relationship between adolescent aspirations and academic performance over time.
2. To investigate the influence and potential mediating and moderating roles of self-concept factors (self-efficacy, self-esteem, and self-regulation) in this relationship.
3. To contextualize possible identities within frameworks of critical racial consciousness and socio-economic inequality.

4 Significance of the study

This study enhances our understanding of how aspirations function within unequal schooling environments, particularly for South African adolescents. By focusing on self-concept and its potential mediating role, the research identifies psychological processes that may support or hinder academic success. The findings highlight the significant impact of socio-economic disparities on educational outcomes. This is important not only in the context of social change in South Africa, but also globally. The results can inform parents, teachers, school administrators, and career counselors about adolescents' aspirations, assisting students in planning for their futures. As such, the study provides a foundation for policy recommendations that prioritize equity-oriented and culturally responsive interventions.

5 Self-concept

Students' self-concept influences their academic achievement and performance (García-Martínez et al., 2022; Green et al., 2006; Marsh, 1990; Marsh and Hau, 2003; Tus, 2020). Self-concept is an overarching answer to the question, "Who am I?" (Baumeister, 1999; Mann et al., 2004; Markus and Wurf, 1987). Research has demonstrated a positive relationship between self-concept and academic performance (Conlon et al., 2006; Green et al., 2012; Huitt, 2004; Jansen et al., 2014; Marsh and Martin, 2011). In the present study, the researcher focused on the

following psychological factors including self-esteem, self-efficacy, and self-regulation, to determine their influence on the relationship between adolescents' aspirations and academic performance (Lane et al., 2004).

Self-regulation refers to the degree to which students regulate their learning meta-cognitively, motivationally, and cognitively (Pintrich, 2000; Shen and Liu, 2011; Zimmerman, 1986, 1989, 2002, 2013; Zusho et al., 2003). Self-regulated students demonstrate high effort and persistence (Zimmerman, 1990). They actively seek information, structure their environments to support learning (Zimmerman and Martinez-Pons, 1986), and engage in practice opportunities (Zimmerman, 1990). They persist with tasks despite challenges (Schraw et al., 2006) and report greater intrinsic motivation (Alpaslan, 2016; Cheung, 2015; Schunk, 1989; Zimmerman, 2002; Zusho et al., 2003). Thus, self-regulation processes are key to academic success (Paris and Paris, 2001; Schunk and Ertner, 2000).

As previously discussed, self-regulation processes include planning, monitoring, and evaluating performance and progress, and thus influenced by self-efficacy beliefs (Sen, 2016). Studies on the role of self-regulation in academic achievement have found that academic self-efficacy beliefs directly affect cognitive and meta-cognitive learning strategies, effort regulation, and time management (Sadi and Uyar, 2013; Sungur, 2007).

Students with a strong sense of self-efficacy are more likely to set goals, persevere in the face of challenges, and believe in their ability to succeed (Zimmerman et al., 1992). Self-efficacy refers to an individual's belief in their capacity to complete specific tasks within a particular domain, in this case, academic tasks. Research consistently shows that higher levels of academic self-efficacy are associated with improved academic performance, increased motivation and the use of effective learning strategies.

Similarly, self-esteem, a person's overall evaluation of self-worth, has been linked to important academic behaviors and emotional regulation in learning contexts. It influences mood, decision-making and how individuals respond to success and failure (Gerrig and Zimbardo, 2012; Kohn, 1994; Sedikides and Gress, 2003; Swann et al., 2007). Students with high self-esteem tend to exhibit greater confidence, openness to learning, and resilience, all of which support academic success. For example, they are more likely to accept themselves, acknowledge their imperfections, and view challenges as opportunities for growth (Farčić et al., 2020).

In summary, self-regulation, self-efficacy and self-esteem are widely recognized as key components of academic achievement. Self-regulation enables sustained effort toward learning goals, self-efficacy reflects confidence in one's ability to succeed, and self-esteem shapes how students internalize motivation and interpret academic outcomes. However, academic success is not determined solely by an individual's current self-concept or past performance. Crucially, it is also influenced by students' visions of who they might become, their possible selves, and their perceived attainability of these futures.

6 Theoretical frameworks

Drawing on Markus and Nurius' (1986) theory of possible selves and Oyserman's (2007) identity-based motivation theory, this study recognizes that students' motivation and engagement are closely linked to their aspirations and expectations for the future. Markus

and Nurius (1986) shifted the focus from research on ideal selves to research on possible selves, conceptualizing *possible selves* as a bridge between cognition and motivation (Markus and Nurius, 1986, p. 954). When imagining and reflecting on the future, three essential forms of possible selves are typically constructed: the selves we hope to become, termed the hoped-for possible selves, the selves we fully expect to become, referred to as the expected possible selves, and the selves we are afraid of becoming, also known as the feared possible selves (Chalk et al., 2005; Cross and Markus, 1991; Markus and Nurius, 1986; Markus and Ruvolo, 1989; Oyserman and Fryberg, 2006). Possible selves guide and regulate behavior by providing a roadmap that connects the present to the future (Bak, 2015; Hoyle and Sherrill, 2006; Oyserman et al., 2004). They are informed not only by current evaluations of an individual's strengths, weaknesses, talents, and characteristics, but also by evaluations of "what is possible for people like me." This perspective led to the extension of the concept of possible selves to possible identities (Oyserman and James, 2011). Framing possible selves as possible identities allows for consideration of the future self in terms of social categories such as gender, culture, and socio-economic context, offering a multi-layered understanding of adolescent development (Oyserman and James, 2011). In unequal societies like South Africa, the interplay between self-concept and aspirations is deeply influenced by contextual factors, including the legacy of apartheid, persistent economic inequality and disparities within the school system.

As part of the extension of the theory of possible selves, identity-based motivation theory proposes that people use information from their immediate context to decide how to act in a given moment (Oyserman, 2007, 2009a, 2009b, 2015a, 2015b). The theory seeks to explain the processes through which identity influences behavior. In unequal societies like South Africa, the interplay between self-concept and aspiration is strongly shaped by context, including the legacies of apartheid, persistent economic inequality, and school-based disparities. This emphasizes that the capacity to imagine and pursue positive possible selves is shaped by contextual factors.

Critical Race Theory (CRT) is an interdisciplinary framework that emerged in the 1970s and 1980s from legal scholarship in the United States. It examines how race and racism are embedded in laws, policies, and institutions, perpetuating systemic inequality (Delgado and Stefancic, 2017). The theory challenges dominant narratives of neutrality and meritocracy, arguing that racism is not merely individual prejudice but a structural feature of society (Crenshaw et al., 1995). CRT provides a powerful framework for analyzing how apartheid's racial hierarchies persist in South Africa's education system, shaping disparities in resources, academic outcomes, and student aspirations (Soudien, 2012; Fataar, 2017). While CRT originated in U. S. legal scholarship (Delgado and Stefancic, 2017), its views resonate deeply in post-apartheid South Africa, where race and class intersect to reproduce inequality (Ndimande, 2016). Despite democratic reforms, apartheid-era spatial planning, township versus suburbs, and school funding disparities (Quintile 1–3 versus Quintile 5), continue to perpetuate racialized inequality (Spaull, 2013). For example, township schools, which predominantly cater for Black students face overcrowding, a legacy of Bantu education (Ndimande, 2013). Post-apartheid education policies reflect partial equity gains but have not to dismantled structural barriers (Motala and Sayed, 2009).

7 The present study

This study frames self-concept not only as an internal psychological trait but also as a social and political construct, influenced by institutional context, racialized experiences and access to opportunity. By integrating critical race theory and possible selves theory, the study explores how students navigate the intersection of their current and future aspirations within unequal educational landscapes.

8 Methodology

The present study examined the influence of psychological factors such as self-regulation, self-efficacy and self-esteem on academic performance. To support the study, the following objectives were outlined:

1. To examine the relationship between adolescent aspirations and academic performance over time.
2. To investigate the influence and potential mediating or moderating roles of self-concept factors (self-efficacy, self-esteem, and self-regulation) in this relationship.
3. To contextualize possible identities within frameworks of critical racial consciousness and socio-economic inequality.

Hypotheses:

$H_{1a} \text{ (Null)}$ – Adolescent aspirations have no influence on academic performance.

$H_{1b} \text{ (Alt)}$ – Adolescent aspirations influence academic performance.

RQ1: What is the relationship between adolescent aspirations and academic performance?

$H_{2a} \text{ (Null)}$ – Self-concept factors have no impact on the relationship between aspirations and academic performance.

$H_{2b} \text{ (Alt)}$ – Self-concept factors will significantly influence the relationship between adolescent aspirations and academic performance over time; some factors will either mediate or moderate this relationship between adolescent aspirations and academic performance.

RQ2: To what extent do self-concept factors (self-efficacy, self-esteem, and self-regulation) influence the relationship between aspirations and academic performance?

$H_{3a} \text{ (Null)}$ – There is no significant change or difference in the motivational role of possible identities between students over time.

$H_{3b} \text{ (Alt)}$ – The motivational role of possible identities will change over time and will differ between students from Quintile 2 and Quintile 5 schools.

RQ3: How does the motivational role of possible identities change over time, and to what extent do these changes differ between various socio-economic schooling contexts?

The study employed a quantitative, longitudinal panel design to examine the changes in the relationships among the following psychological factors: self-regulation, academic self-efficacy, self-esteem, aspired identities, and academic performance. Data were collected four times over an 18-month period from students attending three mixed-gender public high schools in Johannesburg, South Africa. The same constructs were assessed at each data collection point, except for objective academic performance, which was measured once using end-of-year exam results.

8.1 Sampling method and participant recruitment

Participants were recruited using purposive sampling. Three schools were selected to ensure diversity in socio-economic status and racial composition by including institutions from different categories of the South African school quintile system. One school was selected from Quintile 2 (representing under-resourced, no-fee township schools), one from Quintile 4 (a mid-range school), and one from Quintile 5 (a fee-paying, suburban school).

Within each school, all Grade 9 and Grade 11 students were invited to participate in the study during their Life Orientation periods, ensuring inclusion across gender, race, and academic levels. Participation was voluntary, and written informed consent was obtained from all students and their guardians before data collection began.

8.2 Representativeness and socio-economic diversity

The inclusion of schools from three distinct quintiles was intentional and aimed to capture a socio-economically diverse sample. Quintile 2 schools are typically located in economically disadvantaged township areas and serve predominantly Black students. In contrast, Quintile 5 schools are located in suburban areas, have historically served White students, and have greater access to resources. Quintile 4 schools fall in between, often serving racially and economically mixed communities.

This approach ensured that the study included students from varied socio-economic backgrounds and school environments, allowing for a comparative analysis of how different schooling contexts impact students' aspirations and self-concept development. The sample thus reflects a cross-section of public school students within Johannesburg's urban education landscape, with differing levels of access to educational resources and support structures. Schools are also commonly classified based on the surrounding community as either *township* or *suburban* schools (Pretorius and Klapwijk, 2016). Although formal segregation has ended, South African township schools remain largely segregated because the majority of students are Black people. In contrast, suburban schools are desegregated and are attended by students from both the majority and minority groups with similar economic backgrounds.

8.3 Sample size

The overall sample size at Time 1 was 682 participants. Of these, 403 students participated at Time 2, 557 students participated at Time

3, and 261 students participated at Time 4. The number of participants from the three schools was comparable. Additionally, the sample size of Grade 9 participants was larger ($n = 364$) than that of Grade 11 participants ($n = 318$). See Table 1 for the number of participants per time for each school and grade.

As previously mentioned, all three schools were mixed gender. Table 2 presents the gender distribution of the participants.

School 1 and School 2 were located in townships populated by Black South Africans, while School 3 was a historically White suburban school. Analysis of the retention rate indicated a decline in the number of participants between Time 1 and Time 2, which can be attributed to data collection at Time 2 occurring during mid-exam preparation. A comparison of the demographics of the participants, it can be noted that gender was approximately equally distributed.

8.4 Procedure

Ethical clearance and permission to conduct the study were obtained from the university, the provincial education department and the headmasters of the respective schools. Data were collected at the beginning of the academic year in April 2018 (Time 1), mid-year in July 2018 (Time 2), at the end of the academic year in October 2018 (Time 3), and at the beginning of the following year in March 2019 (Time 4). Participants provided informed consent prior to data collection. Paper-and-pencil questionnaires were distributed during their Life Orientation class.

8.5 Measurements

8.5.1 Possible selves

Expected and feared possible identities were assessed using the instructions as outlined in the Possible Selves Questionnaire (Oyserman et al., 2004). Participants were asked to imagine what they expected to be and what they would not like to be in the future. Two independent raters evaluated the expected and feared possible identities according to the Oyserman et al. (2004) classification.

This classification distinguishes expected and feared possible identities related to academic achievement (school-oriented), interpersonal relationships, personality traits, physical/health issues, material/lifestyle, non-normative responses, and an additional category or responses that did not fit anywhere, were labeled not-codable. Interrater reliability for coding possible selves showed moderate to substantial agreement ($k = 0.60\text{--}0.79$), consistent with Landis and Koch's (1977) interpretation guidelines. All ambiguous classifications were discussed by the raters until agreement was reached.

8.5.2 Academic possible identities

This construct was assessed using the multi-dimensional 51-item Persistent Academic Possible Selves Scale (PAPSS) for Adolescents (Lee, 2013; Lee et al., 2016). The scale consists of three goal dimensions and five domain-specific dimensions. The goal dimensions include improving class marks, being a better student and paying more attention in class. The domain-specific dimensions are: social group identity, peer group identity, self-concept, motivational self-regulated learning and performance. The 51-item PAPSS for Adolescents demonstrated excellent Cronbach's alphas (Time 1: $\alpha = 0.94$; Time 2: $\alpha = 0.96$; Time 3: $\alpha = 0.96$; Time 4: $\alpha = 0.95$).

The adapted self-regulation scale, consisted of nine items from the *self-regulation* dimension of the Motivational Strategy for Learning Questionnaire (MSLQ; Pintrich and De Groot, 1990) and three items adapted from the *motivational self-regulated learning* subscale of the PAPSS for Adolescents (Lee, 2013; Lee et al., 2016). The scale demonstrated acceptable internal consistencies (Time 1: $\alpha = 0.72$; Time 2: $\alpha = 0.72$; Time 3: $\alpha = 0.75$; Time 4: $\alpha = 0.76$).

Self-efficacy was assessed using nine items adapted from the *self-efficacy* dimension of the MSLQ (Pintrich and De Groot, 1990).

TABLE 2 Number of participants according to gender per time point.

Gender	Time 1	Time 2	Time 3	Time 4
Male	326	202	257	119
Female	356	201	300	142

TABLE 1 Number of participants per time for each school and each grade.

Time points	Grade	School 1	School 2	School 3	Total
		Quintile 2	Quintile 4	Quintile 5	
Time 1	Grade 9	85	148	131	364
April 2018	Grade 11	110	108	100	318
	Total	195	256	231	682
Time 2	Grade 9	6	140	91	237
July 2018	Grade 11	25	89	52	166
	Total	31	229	143	403
Time 3	Grade 9	80	139	107	326
October 2018	Grade 11	74	77	80	231
	Total	154	216	187	557
Time 4	Grade 9	41	72	50	163
March 2019	Grade 11	34	15	49	98
	Total	75	87	99	261

The scale showed high reliability coefficients for all four time points (Time 1: $\alpha = 0.86$; Time 2: $\alpha = 0.88$; Time 3: $\alpha = 0.88$; Time 4: $\alpha = 0.88$).

The self-esteem construct was assessed using the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1989/2015). The scale, consisting of the remaining nine items, demonstrated acceptable reliability coefficients (Time 1: $\alpha = 0.69$; Time 2: $\alpha = 0.74$; Time 3: $\alpha = 0.73$; Time 4: $\alpha = 0.74$).

For subjective academic achievement, participants were asked to answer the following questions: (1) “What *past* marks did you score for most of your subjects *last year*?” (2) “What marks do you *expect* to score for most of your subjects *this year*?” and (3) “What marks do you *hope* to score for most of your subjects *this year*?”

Objective academic achievement data were obtained from school management in the form of end-of-year examination results.

8.6 Data analysis plan

To examine the relationship between adolescents’ aspirations, self-concept (self-efficacy, self-esteem and self-regulation) and academic performance, a series of quantitative analyses were conducted using the Statistical Package for the Social Sciences version 28 (IBM SPSS 28).

Preliminary analyses involved screening the data for missing values, normality and reliability. Internal consistency of the scales was assessed using Cronbach’s alpha (Cronbach, 1951). Cronbach’s alpha is a widely used measure of internal consistency reliability, with values above 0.70 generally considered acceptable, values above 0.80 regarded as good, and values above 0.90 indicating excellent reliability (Nunnally and Bernstein, 1994). In this study, acceptable reliability values were observed across all time points, confirming the consistency of the scales.

8.7 Missing data handling

Participants with excessive missing data, defined as more than 30% of items missing on a scale, were excluded listwise. For the remaining data, Little’s MCAR test indicated that data were missing completely at random, justifying the use of listwise deletion in the main analyses.

8.8 Hypothesis testing

To address Objective 1, Pearson product-moment correlations were computed to examine the relationship between adolescent aspirations and academic performance over time. A repeated measures analysis of variance (ANOVA) was used to assess whether adolescents mentioned possible identities from the academic achievement domain. This method was selected to evaluate within-subject differences across four time points and to test whether observed changes were statistically significant over the 18-month period. Mauchly’s test was conducted to assess sphericity, where violations were observed, Greenhouse–Geisser corrections were applied.

To address Objective 2, a series of hierarchical multiple regression analyses were performed at each time point. These analyses tested whether self-concept factors (self-efficacy, self-esteem and

self-regulation) significantly predicted academic performance and whether these factors mediated or moderated the relationship between adolescent aspirations and academic performance.

Separate models were tested for subjective and objective academic performance as dependent variables. The assumptions of linear regression, including linearity, normality, homoscedasticity and absence of multicollinearity, were tested using residual plots, variance inflation factors (VIF) and normal probability plots.

Regression models were used instead of structural equation modeling (SEM) due to sample size limitations and the exploratory nature of the analysis. While a generalized linear model (GLM) could have been appropriate for testing multiple dependent variables simultaneously, the use of separate regression models allowed for more focused analysis.

Effect sizes, standardized coefficients (β), R^2 values, and p -values were reported for all regression analyses. Statistical significance was set at $p < 0.05$, and confidence intervals were used to estimate the precision of the results.

For Objective 3, the study contextualized possible identities within frameworks of critical racial consciousness and socio-economic inequality. Multiple linear regression analyses were conducted at each time point to assess the motivational role of possible identities. Assumptions of linearity, independence of errors (Durbin-Watson test), homoscedasticity, and absence of multicollinearity ($VIF < 5$) were verified before analysis.

9 Results

This longitudinal panel study examined the relationship between adolescents’ aspirations and academic performance, focusing on self-concept dimensions such as self-esteem, self-efficacy, and self-regulation, in a diverse South African context.

The findings from the correlation analyses suggest that adolescents’ aspirations, measured as persistent academic possible selves, are consistently and positively linked to self-concept factors such as self-efficacy, self-esteem and self-regulation over time (see Table 3). This supports the theoretical premise that self-concept plays a central role in sustaining motivation and shaping academic trajectories (Markus and Nurius, 1986; Oyserman, 2015a,b). The weaker and sometimes negative associations between school climate and academic performance, especially at later time points, may reflect the influence of structural and contextual inequalities highlighted in Critical Race Theory, where the broader school environment may not always align with or support students’ academic identities. Importantly, the strengthening relationship between subjective and objective performance over time highlights how improving self-concept can lead to better academic results, particularly in under-resourced contexts.

The findings suggest a strong relationship between adolescent aspirations and academic performance, as evidenced by the high frequency of academic achievement-related possible identities. Adolescents most frequently identified future selves within the academic achievement domain, even when referencing negative or feared identities. Comparisons of the different domains of positive and negative possible identities revealed that the academic achievement domain was significantly different from all other domains.

9.1 Assumptions for regression analysis

All regressions were conducted after checking standard assumptions. In terms of normality, residuals were normally distributed, confirmed through visual inspection of Q–Q plots and Shapiro–Wilk tests ($p < 0.05$). Variance inflation factors (VIFs) were within acceptable limits (<2.0), indicating no multicollinearity. Scatterplots of standardized residuals indicated linearity and homoscedasticity. See Table 4 for full regression results and beta coefficients.

9.2 Repeated measures ANOVA results

Across all four time points, repeated measures ANOVA indicated that the academic achievement domain was consistently and significantly different from all other domains for both positive and negative possible identities.

At Time 1, positive academic identities ($M = 0.78$, $SD = 0.2$) and negative possible identities ($M = 0.38$, $SD = 0.31$) differed significantly from other domains, $F(3.20, 145.56) = 948.94$, $p < 0.001$, with sphericity violations addressed using the Greenhouse–Geisser correction ($\epsilon = 0.537$).

At Time 2, academic achievement remained significantly higher (positive: $M = 0.79$, $SD = 0.27$; negative: $M = 0.34$, $SD = 0.35$) than other domains $F(5.06, 214.92) = 413.32$, $p < 0.001$. *Post hoc*

Bonferroni comparisons confirmed that academic achievement scores were significantly greater ($p < 0.001$) than all other domain scores.

At Time 3, both positive ($M = 0.75$, $SD = 0.31$), and negative ($M = 0.35$, $SD = 0.36$) academic identities again exceeded other domains, $F(1, 507) = 2249.24$, $p < 0.001$.

At Time 4, the same pattern persisted (positive: $M = 0.80$, $SD = 0.27$; negative: $M = 0.39$, $SD = 0.35$) confirming the stability of academic achievement's prominence across the study period.

Overall, these results demonstrate that participants consistently rated academic achievement as their most salient possible identity, both positively and negatively, over time.

Furthermore, the greater number of positive compared to negative possible selves, particularly in the academic domain, suggests that academic aspirations are central to how adolescents envision their futures. This aligns with research by Oyserman et al. (2006), which indicates that adolescents are more readily able to articulate hoped-for academic selves than feared ones. These results imply that academic aspirations are not only salient in adolescent identity development but may also serve as motivational drivers of academic performance.

To determine the role of self-concept in mediating the relationship between adolescents' aspirations and academic achievement. The findings consistently showed a positive association between the psychological factors, namely self-regulation, academic self-efficacy, self-esteem, and academic performance. These results align with previous studies, that have

TABLE 3 Correlations of the different variables for Time 1, Time 2, Time 3, and Time 4.

Variables	Time 1	Time 2	Time 3	Time 4
Persistent Academic Possible Selves ↔ Motivation	0.45**	0.46**	0.44**	0.45**
Persistent Academic Possible Selves ↔ Self-efficacy	0.52**	0.51**	0.50**	0.49**
Persistent Academic Possible Selves ↔ Academic Goals	0.48**	0.49**	0.47**	0.46**
Persistent Academic Possible Selves ↔ Subjective Norms	0.43**	0.42**	0.41**	0.40**
Persistent Academic Possible Selves ↔ Peer Identity	0.41**	0.40**	0.39**	0.38**
Self-regulation ↔ Self-efficacy	0.50**	0.51**	0.49**	0.48**
Self-regulation ↔ Academic Goals	0.47**	0.46**	0.45**	0.44**
School Climate ↔ Subjective Academic Performance (Hoped-for)	ns	ns	ns	ns
School Identification ↔ Subjective Academic Performance (Expected)	0.28*	0.27*	0.29*	0.28*
Objective Academic Performance ↔ Self-efficacy			0.21*	
Objective Academic Performance ↔ Self-esteem			0.19*	
Objective Academic Performance ↔ Academic Goals			0.20*	

* $p < 0.01$; ** $p < 0.001$. ns refers to not significant.

TABLE 4 Summary of regression analyses per time point.

Time point	F (df1, df2)	p -value	R^2	Significant predictors
Time 1	$F(3, 670) = 7.67$	<0.001	0.033	Self-efficacy ($\beta = 0.15$, $p = 0.001$), Self-esteem ($\beta = 0.08$, $p = 0.033$)
Time 2	$F(3, 398) = 7.34$	<0.001	0.052	Self-efficacy ($\beta = 0.16$, $p = 0.005$)
Time 3	$F(3, 550) = 10.85$	<0.001	0.056	Self-regulation ($\beta = 0.17$, $p < 0.001$)
Time 3 (Objective)	$F(3, 553) = 4.11$	$=0.007$	0.022	Self-esteem ($\beta = 0.11$, $p = 0.009$)
Time 4	$F(3, 278) = 11.41$	<0.001	0.110	Self-efficacy ($\beta = 0.27$, $p = 0.006$), Self-regulation ($\beta = 0.23$, $p = 0.023$)

demonstrated positive relationships between these constructs (Ahmadi, 2020; Bhatt and Bahadur, 2018; Lane et al., 2004; Maropamabi, 2014).

To examine the influence of self-concept factors on academic performance, multiple linear regression analyses were conducted across four time points, followed by mediation and moderation analyses using Hayes' PROCESS macro (Models 4 and 8), with 5,000 bootstrap samples. The predictors included academic self-efficacy, self-regulation and self-esteem. Subjective academic performance (hoped-for marks) was the dependent variable at all time points, while objective performance (end-of-year exam results) was assessed only at Time 3.

9.2.1 Time 1

The regression model was significant, $F(3, 670) = 7.67, p < 0.001$, explaining 3.3% of the variance in hoped-for academic performance. Both self-efficacy ($\beta = 0.15, t = 3.265, p = 0.001$) and self-esteem ($\beta = 0.08, t = 2.137, p = 0.033$) significantly predicted performance, while self-regulation was not significant, partially supporting Hypothesis 2.

9.2.2 Time 2

The model remained significant, $F(3, 398) = 7.34, p < 0.001$, accounting for 5.2% of the variance. Only academic self-efficacy significantly predicted subjective performance ($\beta = 0.16, t = 2.816, p = 0.005$). Self-regulation ($\beta = 0.08, t = 1.510, p = 0.132$) and self-esteem ($\beta = 0.04, t = 0.796, p = 0.426$) were not significant, again partially supporting Hypothesis 2.

9.2.3 Time 3

For subjective performance, the model was significant, $F(3, 550) = 10.85, p < 0.001$, explaining 5.6% of the variance. Self-regulation was the only significant predictor ($\beta = 0.17, t = 3.410, p < 0.001$), while self-efficacy ($\beta = 0.07, t = 1.394, p = 0.164$) and self-esteem ($\beta = 0.07, t = 1.718, p = 0.086$) were not significant. This partially confirms the hypothesis.

Regarding objective academic performance, the regression model was significant $F(3, 553) = 4.11, p = 0.007$, explaining 2.2% of the variance. Only self-esteem significantly predicted the exam results ($\beta = 0.11, t = 2.610, p = 0.009$), while self-efficacy ($\beta = 0.09, t = 1.779, p = 0.076$) and self-regulation ($\beta = -0.05, t = 1.039, p = 0.299$) were not significant.

9.2.4 Time 4

The model was significant, $F(3, 278) = 11.409, p < 0.001$, explaining 11% of the variance in hoped-for subjective academic performance. Both self-efficacy ($\beta = 0.27, t = 2.744, p = 0.006$) and self-regulation ($\beta = 0.225, t = 2.290, p = 0.005$) significantly predicted the outcome variable. However, self-esteem ($\beta = 0.086, t = 1.191, p = 0.235$) was not a significant predictor. This partially supports the hypothesis.

9.3 Mediation and moderation analyses

Mediation and moderation analyses were conducted using Hayes' PROCESS macro (Model 4 and 8) with 5,000 bootstrap samples.

9.3.1 Time 1 and time 2

Mediation analyses tested whether self-regulation mediated the relationship between self-efficacy and academic performance. At both time points, self-efficacy significantly predicted self-regulation (Time 1: $b = 0.50, p < 0.001$; Time 2: $b = 0.42, p < 0.001$). However, self-regulation did not significantly predict academic performance at either time point, indicating no mediation effect.

Moderation analyses examined self-esteem as a moderator between self-efficacy and academic performance. Self-esteem moderated this relationship, with the strength of the self-efficacy performance link varying by levels of self-esteem.

9.3.2 Time 3

Mediation analysis showed that self-efficacy significantly predicted self-regulation ($b = 0.49, p < 0.001$). Self-regulation, in turn, significantly predicted academic performance ($b = 0.25, p = 0.001$), while the direct effect of self-efficacy was not significant, supporting a mediation effect.

Moderation analysis revealed a significant interaction between self-efficacy and self-esteem on academic performance ($b = 0.21, p = 0.017$), indicating that self-esteem moderated the effect of self-efficacy.

9.3.3 Time 4

Self-efficacy significantly predicted self-regulation ($b = 0.49, p < 0.001$). However, self-regulation did not significantly predict academic performance, indicating no mediation effect.

The moderation model showed no significant interaction between self-efficacy and self-esteem. Self-esteem significantly predicted academic performance, while the effect of self-efficacy varied with levels of self-esteem but did not show significant moderation.

In summary, across the four time points, academic self-efficacy consistently predicted self-regulation, but the mediating role of self-regulation between self-efficacy and academic performance was supported only at Time 3. Self-esteem moderated the relationship between self-efficacy and academic performance at Times 1–3 but not at Time 4. These findings partially support the hypotheses and highlight the dynamic roles of self-concept components in academic outcomes over time.

From a Critical Race Theory perspective, the observed differences in possible identities between participants from Quintile 2 and Quintile 5 schools highlight the enduring impact of structural inequalities in South African education.

At Time 1, significant disparities emerged in the articulation of negative possible identities, with students from the under-resourced Quintile 2 school more likely to anticipate constrained or limiting futures. By Time 3, both positive and negative possible identities showed significant variation across school contexts, highlighting the cumulative influence of unequal educational environments on students' visions of self.

When assessing the motivational role of possible identities, a significant relationship emerged only at Time 3. This suggests that the effect of future-oriented self-concept on motivation is context-dependent becoming more pronounced over time and shaped by school context (see Table 5). Nearly half of the Quintile 5 participants expressed concrete career goals, such as "becoming a lawyer or doctor" and consistently mentioned the same careers over time. In contrast, participants from the Quintile 2 school more often expressed broader, survival-oriented aspirations, such as "finish matric," "get a job," or "become a soccer player."

TABLE 5 Summary of multiple regressions on possible identities.

Variable	<i>F</i>	df	<i>p</i> -value	Partial η^2	Interpretation
Negative possible identity (Time $\times$ School)	5.62	2, 180	0.004	0.059	Significant interaction between time and school context
Positive possible identity (Time $\times$ School)	6.73	2, 180	0.002	0.070	School context influences development of positive identities over time
Motivation (Regression, Time 3)	7.85	1, 90	0.006	$R^2 = 0.28$	Possible identity predicts motivation at Time 3

These findings suggest that systemic disparities in school resources shape not only academic outcomes but also the specificity, stability, and motivational power of students' possible selves.

10 Discussion

This study highlights the significant role of self-concept in mediating the relationship between adolescents' aspirations and academic performance in a context marked by deep socio-economic and racial inequalities. By focusing on self-regulation, self-efficacy, and self-esteem, the findings show that while adolescents do aspire to academic success, the attainability of their goals is shaped by contextual limitations, including the quality of schooling and systemic inequities. The integration of Critical Race Theory reveals that disparities in educational outcomes are not merely individual failings but are structurally produced and maintained. Therefore, addressing the aspiration-attainment gap requires interventions at both psychological and systemic levels.

11 Limitations

While this study provides valuable insights into the relationship between adolescents' aspirations, self-concept, and academic performance within the South African context, several limitations must be acknowledged. First, the use of a quantitative approach and a longitudinal panel was meant to examine relationships over time. However, 18 months is not long enough to capture long-term developmental changes, especially across transitional life stages. Second, the reliance on self-reported data for key constructs such as self-efficacy, self-esteem, and self-regulation introduces potential biases, including social desirability and recall bias, which may affect the accuracy of responses. Third, although the study was conducted in different basic education districts, representing various socio-economic strata (Quintiles 2–5), these students and schools are situated within the same province. This limits the generalisability of the findings to other provinces or national contexts. Fourth, differences between school environments, such as suburban versus township norms, may introduce variability in how socio-cultural contexts influence students' aspirations and self-concept. Fifth, factors such as parental involvement, peer influence, and access to external support systems were not measured, and these may have influenced students' self-concept and academic trajectories.

12 Recommendations

The majority of South Africa's population comprises Black people. In an attempt to overturn apartheid legacies, historically White schools were opened to students of all races. However, the desegregation

process of these schools has followed an assimilation approach, where the values, traditions and customs of White South Africans frame the school context. This might make it difficult for the Black students to develop a sense of belonging (Bazana and Mogotsi, 2017; Soudien, 2012). Township students are also not immune to feeling lost in the school environment, and a variety of factors inform their views of the school. For example, the lack of resources, especially the crowded classrooms, have an impact on how they connect with the school environment. While the school climate shapes students' achievement, the classroom environment remains the most crucial area where the teachers have direct interaction with the students. Teachers need to engage with the students in a way that makes them feel valued and prevent feelings of inadequacy, which could have a negative impact on their overall well-being (Iovino et al., 2021).

Policy and practice responses should prioritize the development of students' self-efficacy, self-esteem, and self-regulation to address the aspiration-attainment gap, particularly in under-resourced contexts. This can be achieved through:

12.1 Promoting academic self-efficacy through targeted classroom practices

Teachers can strengthen students' self-efficacy by providing structured opportunities for mastery and success in progressively challenging tasks. Breaking down complex work into manageable tasks allowing students to build confidence progressively. Peer modeling and mentoring, where peer successes are showcased, can reinforce students' belief in their own potential.

12.2 Enhancing self-regulation through structured support

Given that self-regulation significantly predicted academic outcomes at certain time points, schools can integrate self-regulatory skills into daily instruction. Strategies may include guided goal setting, self-monitoring checklists, and reflective activities that encourage students to evaluate their own progress and adapt strategies accordingly.

12.3 Building self-esteem within culturally responsive frameworks

Culturally relevant teaching materials that reflect students' identities and lived experiences can affirm self-worth. Applying principles from Critical Race Theory, teachers can facilitate critical discussions about structural inequalities and empower students to see themselves as agents of change within their communities.

12.4 Curriculum enhancements and teacher training

Embedding self-concept development within Life Orientation modules can ensure sustained attention to these psychological constructs. Teacher professional development should include training in culturally responsive pedagogy and motivational strategies. Mentorship programs and structured family engagement can extend this support beyond schools.

12.5 School-wide support structures

Under-resourced schools can benefit from dedicated safe spaces, peer support groups and counseling services focused on psychological wellbeing. These structures can help students develop resilience, sustain motivation and maintain a positive self-concept despite challenging circumstances.

Beyond the school level, school management teams should advocate for budget reallocation to direct more resources toward Quintile 1–3 schools, with investment in laboratories, libraries, and teacher development. Curricula should be revised to include African epistemologies and histories, creating culturally affirming and identity-relevant learning environments. Interventions should also involve collaborations between teachers, social workers, psychologists, health workers, community organizations and parents to strengthen holistic student support.

Future studies could enhance these findings by extending the study duration to several years, rather than just 18 months. Participants could be tracked as they transition from matric, the last year of formal schooling until they complete a three-year tertiary program. Researchers could consider adapting or developing new scales specifically tailored to the context and population under study. For example, the use of Afro-centric psychometric tools that reflect communal values such as Ubuntu (Nsamenang, 2010) and exploring transnational comparative research on the aspiration-attainment gap in other post-colonial contexts such as India and Brazil.

13 Conclusion

This study highlights the urgent need to address educational inequality not solely through interventions aimed at individual students, but through comprehensive, systemic transformation. The findings demonstrate the role of psychological factors in the relationship between adolescents' aspirations and academic performance. However, these psychological processes are not developed in a vacuum; they are shaped by the broader social, economic and historical contexts in which students live and learn.

Critical race theory provides a powerful lens through which to understand how South Africa's schooling system continues to operate as a site of racialized power. Resource deprivation, underfunding and curriculum marginalization shape and restrict students' perceptions about what is possible and attainable for them (Batisai et al., 2022; Chuene and Teane, 2024). The findings point to the urgent need for policies and school-based interventions that support the development of students' self-concept. By equipping teachers and school systems to nurture

self-efficacy, self-regulation, and self-worth, education policy can better close the aspiration-attainment gap and ensure more equitable academic outcomes. Empowering adolescents to see themselves as capable and worthy of success is not only crucial and relevant in a post-apartheid South African context, but it is also a global obligation.

Data availability statement

The data supporting this study are available from the corresponding author upon reasonable request, subject to ethical and institutional approval.

Ethics statement

The studies involving humans were approved by The Unisa College of Human Sciences Research Ethics Committee and the Gauteng Department of Basic Education Research office. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

NM: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing.

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