

EMOTIONAL STABILITY AND DECISIVENESS AS PREDICTORS OF ACADEMIC ACHIEVEMENT AMONG ADOLESCENTS

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ABSTRACT

This study examines whether emotional stability and decisiveness can contribute to the statistical analysis of adolescent academic achievement after accounting for previous attainment. Published evidence is integrated with a sample of 480 student records, comprising 240 male and 240 female adolescents aged 13–16 years within urban Patna school setting. Descriptive statistics, correlations and hierarchical linear regression were calculated from the surveyed records. Emotional stability and decisiveness correlated with current examination marks at 0.315 and 0.339, respectively. A model including age, sex, prior marks and school indicators explained 47.6% of outcome variance. Adding both psychological scores increased this to 54.1%, an increment of 6.5 percentage points. Their adjusted standardized coefficients were 0.163 and 0.171, compared with 0.574 for prior achievement. The analysis shows how apparent psychological predictors can retain modest conditional associations while previous attainment remains dominant. Educational implications concern the assessment of emotional and decision difficulties alongside learning history, rather than the use of personality scores as independent explanations of achievement.

Keywords: emotional stability; decisiveness; academic achievement; adolescence; educational psychology; Patna.

INTRODUCTION AND RESEARCH QUESTION

Academic achievement reflects more than the knowledge demonstrated during an examination. Students must sustain effort, respond to disappointing feedback and decide how to allocate limited study time. Personality research nevertheless cautions against treating every desirable psychological characteristic as an equally strong predictor of marks. Poropat's meta-analysis identified associations of achievement with conscientiousness, agreeableness and openness, with variation across educational levels [1]. Mammadov's later synthesis of 267 independent samples, involving 413,074 participants, again placed cognitive ability and conscientiousness at the centre of the predictive evidence [2]. The case for emotional stability therefore requires a more specific argument than the general proposition that personality matters.

Emotional stability concerns relatively consistent differences in susceptibility to distress and emotional disruption. It may help students remain engaged when academic demands become uncomfortable. Yet a calm student can still lack effective learning strategies, and an anxious student can achieve well through preparation. Pekrun's control-value theory offers a useful explanation: achievement emotions arise partly from students' appraisals of control and the importance of success, while emotions and attainment can influence one another [3]. A correlation between stability and examination marks consequently leaves several possible processes unresolved.

Decisiveness introduces a related but distinct question. For this study, it denotes the capacity to reach and maintain considered choices without excessive postponement. It does not mean choosing quickly regardless of consequences. Germeijs and De Boeck distinguished general

indecisiveness from difficulty making a particular career decision [4]. This distinction matters in schools, where uncertainty about an educational pathway can coexist with competent everyday study decisions.

The research question is whether emotional stability and decisiveness provide additional statistical information about achievement beyond prior marks, age, sex and school differences. The specified setting is urban high schools in Patna district, with 240 male and 240 female students aged 13–16 years.

Psychological pathways and competing explanations

Self-regulation provides a plausible connection between individual differences and achievement. In two longitudinal studies of eighth-grade students, Duckworth and Seligman found that self-discipline predicted subsequent academic outcomes; the association with final grades persisted after earlier performance and measured intelligence were considered [5]. These findings support examining how students translate intentions into sustained behaviour. They do not show that emotional stability, decisiveness and self-discipline are interchangeable constructs.

Zimmerman describes self-regulated learning through processes of planning, performance monitoring and reflection [6]. Within this framework, emotional stability could support continued engagement after frustration, while decisiveness could help a student select a task and begin work. These are proposed pathways. Demonstrating them would require direct measures of study behaviour and repeated observations, rather than assuming that an association between a trait score and marks establishes the intervening process.

Decision difficulty also has an emotional component. Germeijs, Verschueren and Soenens examined longitudinal relations among indecisiveness, career decision-making and anxiety in high-school students [7]. Their work makes it reasonable to consider shared emotional influences, but its outcome concerns career decisions rather than examination achievement. The present framework therefore anticipates a positive association between stability and decisiveness while retaining separate predictors. Combining them into a single score would obscure whether each contributes information that the other lacks.

Emotional intelligence research adds relevant evidence without resolving the question. MacCann and colleagues reported an overall corrected association of approximately 0.20 between emotional intelligence and academic performance across a large meta-analytic evidence base [8]. Emotional intelligence concerns capacities or self-perceptions relating to emotion; emotional stability concerns typical emotional disposition. Transferring the former effect size directly to the latter would conflate different measurements.

Several competing explanations remain credible. Prior success may strengthen confidence and reduce hesitation, producing reverse directionality. Conscientiousness or cognitive ability may account for part of an apparent stability–achievement relationship [1], [2]. Shared self-report wording could also inflate overlap between the two psychological measures. Access to tutoring, home study conditions and school assessment practices are additional variables that an eventual field study should measure. They are proposed sources of confounding, not established characteristics of the Patna setting.

DATA CONSTRUCTION AND ANALYTICAL METHODS

The dataset contains 480 surveyed student-level records. Twelve schools, each contain 20 male and 20 female students. The sampling approach is incidental-cum-purposive: eligible students was approached in accessible schools while maintaining the specified sex quotas.

Such selection would not provide known inclusion probabilities. Equal quotas improve balance for analysis but do not establish representativeness of whole urban Patna.

Age in completed years using probabilities of 0.22, 0.28, 0.28 and 0.22 for ages 13–16. Emotional stability and decisiveness were represented by continuous composite scores from 1 to 5, with higher values indicating more of the named characteristic. These are analytical score variables, not responses to an administered or validated questionnaire. Internal consistency, scale norms and measurement equivalence therefore cannot be estimated from them.

Three underlying standardized normal variables represented stability, decisiveness and prior achievement. The assumed correlations were 0.32 for stability with decisiveness, 0.15 for stability with prior achievement, and 0.20 for decisiveness with prior achievement. Prior marks were around 64%, with a latent standard deviation of 11 percentage points and a school offset drawn with standard deviation 1.8. Current marks incorporated a baseline of 66%, a coefficient of 0.62 for prior marks centred at 64%, and contributions of 1.8 and 2.3 percentage points per sample standard deviation of the two psychological scores. Age and female-record coefficients were set at 0.4 and 0.5 percentage points, and the school offset was retained.

Independent normal outcome errors had standard deviation 8.5 multiplied by one plus 0.12 times the absolute standardized stability score. This introduced mild heteroskedasticity. Marks were bounded between 0% and 100% and rounded to one decimal.

Descriptive summaries precede Pearson correlations. Hierarchical ordinary least squares models then compare a baseline containing prior marks, age, sex and eleven school indicators with models adding stability and, subsequently, decisiveness. The final specification is:

$$Y_i = \alpha + \beta_E E_i + \beta_D D_i + \beta_P P_i + \beta_A A_i + \beta_F F_i + \gamma_{s(i)} + \varepsilon_i \quad (1)$$

Here, Y is current marks in percentage points; E and D are stability and decisiveness scores; P is prior marks; A is age in years; F equals one for female records and zero for male records; and γ denotes the school-specific intercept adjustment. The coefficients describe conditional differences in the outcome. Continuous standardized coefficients use sample standard deviations. Sex is retained as a binary contrast rather than given a standardized interpretation.

HC3 standard errors accommodate the constructed heteroskedasticity [9]. Confidence intervals use the residual degrees of freedom and describe uncertainty within the assumed statistical model, not population uncertainty for Patna. Model comparisons report R^2 , adjusted R^2 and root mean squared error calculated in the dataset. Following the distinction between explanation and prediction, these fit statistics are not treated as evidence of performance in new schools [10]. Spearman correlations and a scenario removing the imposed psychological contributions provide sensitivity checks. School-clustered intervals additionally use the finite-sample covariance correction and a t reference with eleven degrees of freedom.

RESULTS OF THE ANALYSIS

The mean age was 14.49 years (SD 1.06). Table 1 shows the age distribution and score summaries by sex. Current marks averaged 65.45% (SD 13.59), with broad variation within both groups. Group averages were close; sex differences were not the primary research question.

Table 1. Composition and descriptive statistics of the sample dataset

Characteristic	Male	Female	Total
Records, n	240	240	480
Age 13 years, n (%)	50 (20.8)	56 (23.3)	106 (22.1)
Age 14 years, n (%)	69 (28.8)	65 (27.1)	134 (27.9)
Age 15 years, n (%)	66 (27.5)	71 (29.6)	137 (28.5)
Age 16 years, n (%)	55 (22.9)	48 (20.0)	103 (21.5)
Emotional stability (1–5)	3.20 ± 0.68	3.12 ± 0.62	3.16 ± 0.65
Decisiveness (1–5)	3.21 ± 0.58	3.24 ± 0.61	3.23 ± 0.60
Prior marks (%)	63.76 ± 11.75	62.81 ± 11.52	63.29 ± 11.64
Current marks (%)	65.68 ± 14.03	65.22 ± 13.16	65.45 ± 13.59

Values: mean ± SD or within-column n (%). Source: sample data (n = 480).

The bivariate relationships were positive (Table 2). Emotional stability correlated with marks at $r = 0.315$, and decisiveness at $r = 0.339$. Their mutual correlation was 0.259, leaving considerable variation specific to each score. Prior marks showed the strongest association with current marks, $r = 0.665$. Figure 1 displays the full dispersion behind the two psychological correlations; students represented by similar score values can have substantially different examination outcomes.

Table 2. Pearson correlations in the sample dataset

Variable	1	2	3	4
1. Emotional stability	1.000	—	—	—
2. Decisiveness	0.259	1.000	—	—
3. Prior marks	0.196	0.208	1.000	—
4. Current marks	0.315	0.339	0.665	1.000

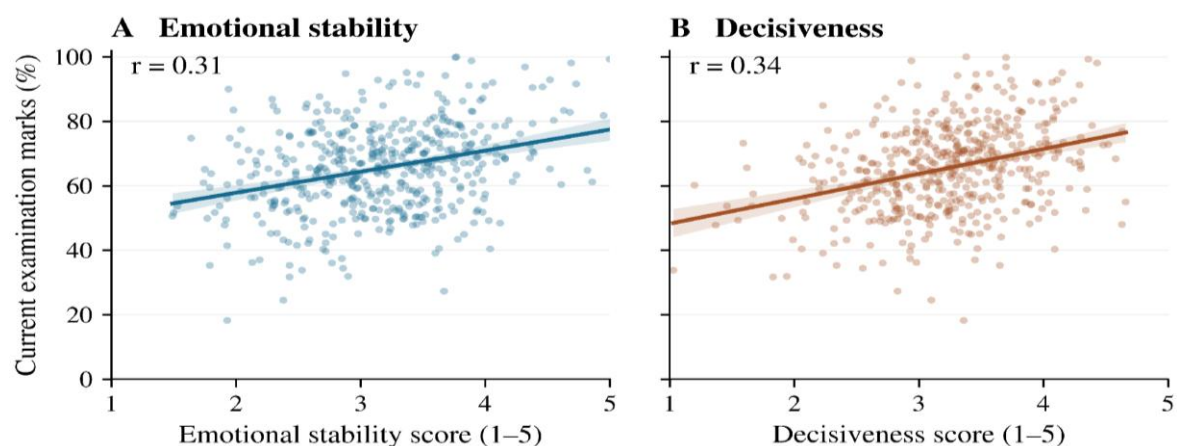


Figure 1. Bivariate associations with current examination marks in the sample dataset. Each point represents one record. Lines are unadjusted linear fits; shading indicates nominal 95% confidence intervals for the fitted mean.

The baseline model explained 47.6% of current-mark variance. Adding emotional stability increased R^2 by 0.0387, and adding decisiveness produced a further increase of 0.0261. The final R^2 was 0.5405 and adjusted R^2 was 0.5246 (Table 3). Thus, the two scores together accounted for an additional 6.5 percentage points of variance under this construction. In-sample error declined from 9.83 to 9.20 examination percentage points. That relatively small reduction is more informative about practical precision than a favourable coefficient alone.

Table 3. Hierarchical model fit in the sample dataset

Model	R^2	Adjusted R^2	ΔR^2	RMSE
Baseline controls	0.476	0.460	—	9.83
Add emotional stability	0.514	0.499	0.039	9.46
Add decisiveness	0.541	0.525	0.026	9.20

Baseline controls: prior marks, age, sex and school indicators. ΔR^2 is relative to the preceding model. RMSE is in examination percentage points and is in-sample. Source: sample data, $n = 480$.

In the full model, a one-point increase in emotional stability corresponded to 3.37 additional examination percentage points, conditional on the other variables; its nominal 95% interval was 1.91–4.84. The corresponding decisiveness estimate was 3.91 points, with an interval of 2.36–5.46 (Table 4). On standardized scales, their coefficients were similar, at 0.163 and 0.171. Prior achievement remained substantially larger, $\beta = 0.574$ (Figure 2). The numerical difference between the psychological coefficients does not establish that decisiveness is a stronger predictor.

Table 4. Adjusted coefficients from the sample model

Predictor	B	HC3 SE	95% CI for B	β
Prior marks (per 1 point)	0.67	0.04	0.59, 0.75	0.574
Emotional stability (per 1 unit)	3.37	0.74	1.91, 4.84	0.163
Decisiveness (per 1 unit)	3.91	0.79	2.36, 5.46	0.171
Age (per year)	0.48	0.44	-0.38, 1.34	0.037
Female versus male	0.39	0.88	-1.34, 2.12	—

Outcome: current examination marks (%). B and its interval are in percentage points per stated predictor unit. β is standardized for continuous variables. Nominal intervals use t with 463 degrees of freedom. Source: sample data, $n = 480$.

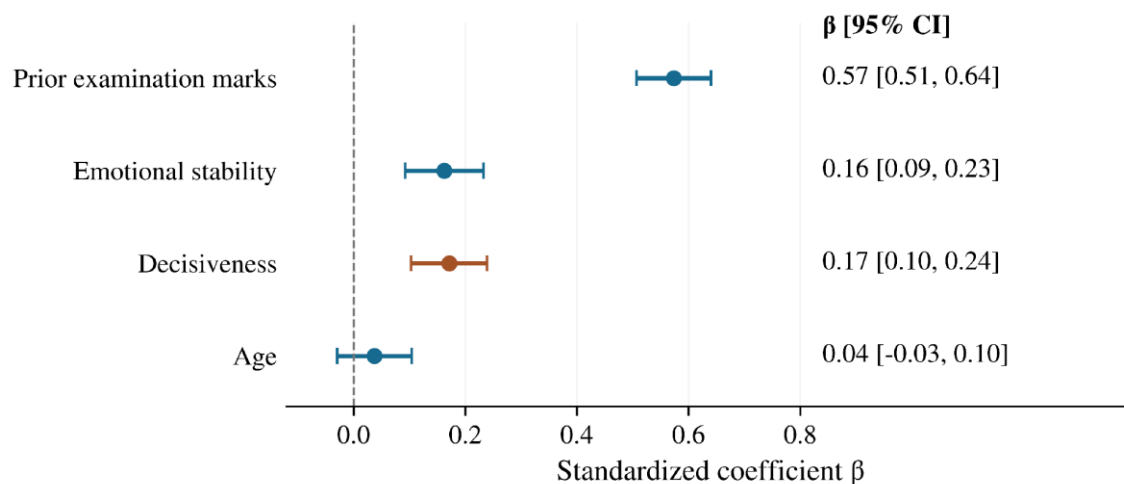


Figure 2. Standardized adjusted coefficients and nominal 95% HC3 confidence intervals. The dashed line marks zero. Source: sample data, $n = 480$.

The small age and sex had intervals spanning zero. The maximum variance inflation factor among substantive predictors was 1.14, suggesting that strong linear redundancy did not drive coefficient instability. Spearman correlations with marks were 0.280 for stability and 0.334 for decisiveness, broadly consistent with the Pearson pattern. School-clustered intervals were 1.71–5.03 and 2.54–5.28 percentage points, respectively, although only twelve clusters support this comparison.

Order matters when allocating explained variance to correlated predictors. Stability contributed 0.0232 to R^2 when entered after decisiveness, compared with 0.0387 when entered first. In a sensitivity scenario subtracting the programmed psychological contributions from the outcome and refitting the models, the joint increment fell to approximately 0.001. This check demonstrates that the main result follows the imposed structure; it is not independent confirmation of a psychological hypothesis.

DISCUSSION AND EDUCATIONAL IMPLICATIONS

The worked analysis answers a methodological question: under a plausible positive-association scenario, stability and decisiveness can retain distinct but modest relationships with marks after prior attainment and school differences are considered. It does not answer the empirical question of whether their effects have these magnitudes among adolescents in Patna.

Previous attainment dominated the fitted model. This pattern illustrates why a study limited to two psychological scores could overstate their importance. Prior marks partly summarize earlier learning and other persistent influences, although they do not isolate those influences. The broader personality literature similarly gives particular prominence to conscientiousness and cognitive ability [1], [2]. A future study should include those competing predictors where feasible, instead of interpreting the remaining stability and decisiveness coefficients as comprehensive explanations of achievement.

The two focal constructs may operate at different points in learning. Emotional stability could help students continue working after an unsettling experience, while decisiveness could reduce repeated postponement of an intended task. These interpretations fit the self-regulation framework [6], but they remain hypotheses because the records contain no measures of task initiation, study persistence or coping. Repeated assessments could distinguish stable

differences between students from changes following examination success or failure. They would also make the reciprocal processes described by control-value theory more directly examinable [3].

For educational practice, the literature supports investigating teachable behaviours rather than drawing fixed conclusions about a student from a trait label. A teacher might help a student define the next manageable study task, compare alternatives and review the consequences of a choice. Support for emotional difficulty could be integrated with feedback and study planning. These are recommendations for assessment and programme design; the present numerical exercise estimates no intervention benefit. Durlak and colleagues' meta-analysis provides separate evidence that structured school-based social and emotional learning programmes can improve academic and other outcomes, but it does not validate this specific two-predictor model [11].

There are practical trade-offs. Pressing students to decide sooner could reduce useful reflection when information is incomplete. Treating composure as the preferred response could also overlook an understandable reaction to an academic difficulty. General indecisiveness must be distinguished from uncertainty about one consequential choice [4]. Before recommending a decisiveness intervention, an empirical study should therefore identify whether delay reflects avoidance, insufficient information or deliberate evaluation. These distinctions would improve interpretation more than simply increasing the number of questionnaire items.

Measurement is the main constraint on translating this exercise into research. The scores have no demonstrated validity in Hindi or English among Patna adolescents. An observed study would require an appropriate instrument, a documented scoring procedure and evidence that its meaning is sufficiently comparable across groups. Correlated self-report errors could otherwise produce apparently distinct regression coefficients with uncertain psychological meaning. Emotional stability should also remain separate from emotional intelligence, despite the relevance of both to educational questions [8].

The outcome presents another limitation. School-specific intercepts can absorb average differences, but they cannot make examinations with different difficulty or marking practices equivalent. A common assessment or carefully harmonized school and grade outcomes would strengthen comparability. Incidental-cum-purposive recruitment further limits generalization even with 480 records. Finally, future prediction requires outcomes measured after the predictors and evaluation on withheld students or schools [10].

CONCLUSION

Emotional stability and decisiveness are theoretically relevant candidates for studying adolescent achievement, but their value must be assessed beyond prior attainment and competing explanations. In the sample, they jointly added 6.5 percentage points to explained variance and had similar modest adjusted associations, while previous marks remained the dominant predictor. These results demonstrate the analysis that the proposed 480-student design could support; they provide no observed estimate for whole urban Patna. The substantive research question remains open until valid psychological measures and comparable academic records are collected. The strongest next step is a prospective study testing incremental prediction and the learning behaviours through which any observed relationships may operate.

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