

Self-Regulation and Investment Discipline among Retail Investors in Ahmedabad: An Exploratory Study of Cognitive Reappraisal, Self-Control, and Martial-Arts Training

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Abstract

Retail participation in Indian financial markets has expanded rapidly, yet regulators report that most individual traders lose money, which places the psychological determinants of disciplined investing at the centre of policy concern. Drawing on the behavioural life-cycle account of self-control and on emotion-regulation theory, this exploratory study asks whether trait self-control and cognitive reappraisal are associated with disciplined financial behaviour among retail investors, and whether investors with a background in karate or another martial art differ on these capacities. A structured questionnaire combining validated scales (the Brief Self-Control Scale and the Emotion Regulation Questionnaire) with an adapted financial-behaviour measure was administered to retail investors in Ahmedabad. After screening and an attention check, 60 valid responses were analysed, of which 11 reported martial-arts training. Cognitive reappraisal was the clearest correlate of disciplined financial behaviour ($r = .48$, $p < .01$) and remained a significant predictor in a regression that also included self-control, financial literacy, and risk tolerance ($\beta = .31$, $p < .001$; model $R^2 = .29$). Self-control showed a positive but non-significant association with financial behaviour and a significant association with lower bias-proneness. Martial-arts training was not significantly related to any construct; the self-control difference favoured practitioners with a small-to-moderate effect ($d = 0.43$) but did not reach significance in a sample of this size. The findings offer preliminary evidence that emotion-regulation strategy, more than knowledge alone, accompanies disciplined investing, and they provide effect-size estimates and a validated protocol to power a larger confirmatory study.

Keywords: behavioural finance; cognitive reappraisal; self-control; emotion regulation; investment discipline; martial arts; retail investors; India

1. Introduction

Household participation in Indian capital markets has grown at an unusual pace. The number of demat accounts reached roughly 21 crore by late 2025, and the investor base has widened beyond the largest metros, with Gujarat among the more active states and Ahmedabad one of its busier centres (SEBI, 2025). Access, however, has not translated into good outcomes for most participants. Regulatory analysis of the derivatives segment found that the large majority of individual traders lost money over recent years, a

pattern that points less to a shortage of market access than to how individuals manage their own decisions once they are in the market.

Behavioural finance locates much of this shortfall in psychology rather than information. Two failures recur in the evidence: the disposition effect, the tendency to realise gains too early while holding losses too long (Shefrin & Statman, 1985), and reactive selling during downturns, both of which are consistent with loss aversion (Kahneman & Tversky, 1979). A parallel literature identifies the capacities that appear to buffer these tendencies. Trait self-control predicts consistent saving and sounder money management (Strömbäck et al., 2017), and cognitive reappraisal, an adaptive way of regulating emotion, is associated with a weaker disposition effect among practising investors (Richards et al., 2018). Financial literacy matters, but knowledge alone is a weak guide to behaviour once affect and impulse enter the decision (Lusardi & Mitchell, 2014).

If self-regulation underpins disciplined investing, a natural question is where such capacities are cultivated. One candidate that behavioural finance has not examined is sustained martial-arts practice. Karate is organised around composure and impulse control under pressure, and training has been linked to stronger self-regulation and emotion regulation in both children and adults (Lakes & Hoyt, 2004; Potoczny et al., 2022). Two literatures therefore sit side by side without meeting: one connecting martial arts to self-regulation, the other connecting self-regulation to financial behaviour. Whether the first extends to the second has not been tested.

This study takes a first, deliberately exploratory step. Working with retail investors in Ahmedabad, it asks three questions. Are trait self-control and cognitive reappraisal associated with disciplined financial behaviour and with lower susceptibility to bias? Do investors who have trained in karate or another martial art differ from those who have not on these capacities? And does self-regulation account for any such difference? Given the difficulty of reaching a large, balanced sample of trained and untrained investors, the study is framed as a pilot. Its contribution is threefold: it provides the first empirical probe of the martial-arts route to investor self-regulation, with effect-size estimates that allow a future study to be powered properly; it re-examines the reappraisal–behaviour association in an emerging-market setting where it has rarely been tested; and it delivers a validated, deployable instrument and protocol. The design is cross-sectional and correlational, so the analysis speaks to association rather than cause.

2. Literature review and hypotheses

2.1 Martial-arts training and self-regulation

A body of work connects martial-arts practice with stronger self-regulation. In a randomised school-based study, Lakes and Hoyt (2004) found that Tae Kwon Do training improved children's cognitive and affective self-regulation more than a standard physical-education programme. Among adults, Potoczny et al. (2022) reported that trait self-control and cognitive reappraisal jointly mediated the relationship between karate training and life satisfaction, with practitioners scoring higher on the Brief Self-Control Scale. A recent randomised trial found that a martial-arts self-regulation programme outperformed conventional exercise on emotion regulation, attentional control, and stress resilience, though the trial was small and did not isolate karate specifically (Zheng et al., 2026). Adolescent practitioners score higher on self-control than non-practitioners (Xu et al., 2022), and reviews report associations with better inhibitory control and lower anger while noting that much of the evidence is cross-sectional and uneven in quality (Ciaccioni et al., 2023; Lafuente et al., 2021). This literature motivates the expectation that practitioners carry stronger self-control and reappraisal into other domains.

H1. Martial-arts training is positively associated with trait self-control. **H2.** Martial-arts training is positively associated with cognitive reappraisal.

2.2 Self-control and disciplined financial behaviour

Self-control is among the more dependable psychological predictors of sound personal finance. In a large representative sample, Strömbäck et al. (2017) found that people with better self-control saved more regularly, managed money more soundly, and reported less financial anxiety, extending the behavioural life-cycle account of saving (Thaler & Benartzi, 2004). Self-control relates positively to the propensity to invest but negatively to excessive investment risk (Sekścińska et al., 2021), shapes financial attitudes across generations (Rey-Ares et al., 2021), and a meta-analysis found that self-control strategies improve saving and spending (Davydenko et al., 2021).

H3. Trait self-control is positively associated with disciplined financial behaviour.

2.3 Emotion regulation and investor bias

How investors handle emotion predicts their exposure to costly bias. Using real trading records, Richards et al. (2018) found that investors who rely on cognitive reappraisal show a smaller disposition effect, whereas those who lean on fast, intuitive processing show a larger one; expressive suppression carried no protective benefit. Qualitative work describes a chain from emotion to bias to decision, in which fear and overconfidence drive loss aversion and impulsive recovery trades (Finet et al., 2025). Reappraisal is the strategy martial-arts training appears to strengthen, which makes it the natural mechanism linking the two halves of this study.

H4. Cognitive reappraisal is negatively associated with susceptibility to behavioural bias.

2.4 Financial literacy, control variables, and the Indian setting

Cognitive and behavioural factors act together in emerging markets. Financial literacy, mental budgeting, and self-control improve financial well-being through better investment decisions (Bai, 2023), and in India financial literacy and self-control drive investment awareness (Kapoor et al., 2025), while emotional intelligence predicts investors' decisions beyond standard biases (Raheja & Dhiman, 2020). Financial literacy and risk tolerance are therefore included as controls. Given the scale of Gujarat's retail base and the documented losses among individual traders, investor discipline is a question with direct local relevance.

H5. Self-control and cognitive reappraisal mediate the association between martial-arts training and disciplined financial behaviour. **H6.** Financial literacy is positively associated with disciplined financial behaviour.

2.5 Conceptual model

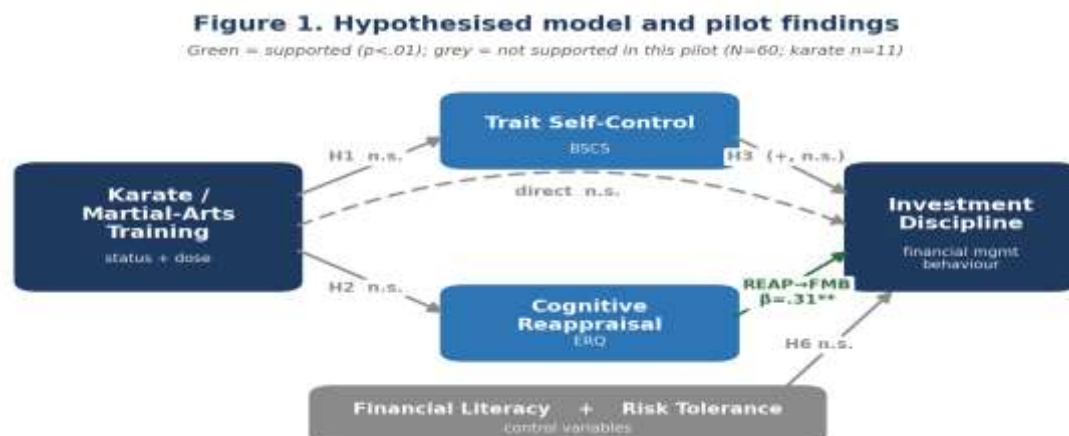


Figure 1. Hypothesised model with pilot findings overlaid. The path from cognitive reappraisal to financial management behaviour was supported; the remaining paths were not supported in this pilot. All relationships are associational.

3. Methods

3.1 Design

The study used a cross-sectional, comparative, correlational survey. Because a large balanced sample of trained and untrained investors was difficult to obtain, the work is reported as an exploratory pilot: it estimates associations and effect sizes rather than testing a fully powered confirmatory model.

3.2 Participants and sampling

The target population was adults (18 or older) resident in Ahmedabad or the surrounding Gujarat region who invest in at least one financial security. Respondents were recruited through martial-arts clubs and general investor networks using purposive and snowball sampling. The questionnaire was distributed online and screened for eligibility at entry. Of 121 raw submissions, 34 were screened out as ineligible or incomplete, and a further 27 failed an embedded attention check and were removed, following standard data-quality practice. The final analytic sample was 60, of whom 11 reported having trained in karate or another martial art (10 in the past, 1 currently) and 49 reported no such training. The high exclusion rate and the small trained subgroup are limitations returned to in Section 7.

3.3 Measures

Trait self-control was measured with the 13-item Brief Self-Control Scale (Tangney, Baumeister, & Boone, 2004). Cognitive reappraisal and expressive suppression were measured with the Emotion Regulation Questionnaire (Gross & John, 2003). Disciplined financial behaviour was measured with an eight-item scale adapted from the Financial Management Behavior Scale (Dew & Xiao, 2011) and its Indian applications (Chavali et al., 2021), covering saving, budgeting, planning, and information use. Susceptibility to bias was measured with five author-developed items reflecting the disposition effect and reactive selling (Shefrin & Statman, 1985). Financial literacy was assessed with the three objective 'Big Three' items (Lusardi & Mitchell, 2014) and scored as a composite from 0 to 3. Risk tolerance was measured with four author-developed items. Self-report items used five-point scales, except the Emotion Regulation Questionnaire, which retained its original seven-point format. Negatively keyed items were reverse-scored before construct means were computed.

3.4 Analysis

Internal consistency was assessed with Cronbach's alpha. Group differences between practitioners and non-practitioners were tested with Welch's t-tests and, given the small and unequal groups, confirmed with Mann-Whitney U tests, with Cohen's d reported as the effect size. Associations among constructs were examined with Pearson correlations, and disciplined financial behaviour was regressed on self-control, cognitive reappraisal, financial literacy, and risk tolerance using ordinary least squares. The mediation in H5 was probed with bias-corrected bootstrapping (5,000 resamples). Analyses were conducted in Python (pandas, SciPy, statsmodels).

3.5 Ethics

Participation was voluntary and anonymous. Respondents gave informed consent at entry, no identifying or account information was collected, and data were analysed only in aggregate.

4. Results

4.1 Sample profile

The sample skewed toward older, experienced, and affluent investors. Most respondents were aged 35 to 54, held a postgraduate qualification, ran a business or were self-employed, reported monthly household income above ₹2 lakh, and had more than five years of investing experience. This profile reflects the networks through which the survey circulated and is considered in the discussion. Table 1 reports the composition.

Table 1. Sample profile (N = 60)

Characteristic	Category	n	%
Group	Martial-arts practitioners	11	18.3
	Non-practitioners	49	81.7
Age	18–24	3	5.0
	25–34	4	6.7
	35–44	17	28.3
	45–54	36	60.0
Gender	Male	34	56.7
	Female	26	43.3
Education	Postgraduate	31	51.7
	Graduate	15	25.0
	Professional	11	18.3
	School	3	5.0
Occupation	Business owner	31	51.7
	Self-employed	12	20.0
	Salaried / Other / Student	14	23.3
Income (₹/month)	Above 2 lakh	41	68.3
	1–2 lakh	9	15.0
	Up to 1 lakh	10	16.7
Experience	More than 10 years	24	40.0
	5–10 years	19	31.7
	Under 5 years	17	28.3

4.2 Reliability and descriptive statistics

The validated scales performed well. Self-control, cognitive reappraisal, expressive suppression, and financial management behaviour all reached acceptable to excellent internal consistency. The two author-developed scales were weaker: the bias-proneness items did not form a reliable scale ($\alpha = .27$), and risk

tolerance fell short of the conventional threshold ($\alpha = .61$). Results involving these two measures are therefore treated as tentative. Table 2 reports reliabilities and descriptive statistics.

Table 2. Reliability and descriptive statistics (N = 60)

Construct	Items	Cronbach's α	Mean	SD
Trait self-control	13	.73	3.49	0.56
Cognitive reappraisal	6	.93	3.88	1.53
Expressive suppression	4	.84	3.51	1.33
Financial management behaviour	8	.91	3.42	0.91
Bias proneness	5	.27	2.56	0.59
Financial literacy (0–3)	3	—	2.43	0.72
Risk tolerance	4	.61	2.61	0.80

Note. Financial literacy is an objective composite, so alpha is not reported. Reappraisal and suppression use a seven-point scale; other constructs use five points.

4.3 Correlations

Cognitive reappraisal was moderately and significantly correlated with financial management behaviour ($r = .48$, $p < .01$), the strongest association in the matrix. Trait self-control was negatively correlated with bias proneness ($r = -.30$, $p < .05$) and positively but not significantly correlated with financial behaviour ($r = .19$). Reappraisal and suppression were strongly correlated ($r = .71$, $p < .01$), which departs from the near-independence usually reported for the two Emotion Regulation Questionnaire subscales and is considered below. Martial-arts training was weakly and non-significantly correlated with every construct. Table 3 reports the matrix.

Table 3. Correlations among study variables (N = 60)

	1	2	3	4	5	6	7
1 Self-control	—						
2 Reappraisal	-.01	—					
3 Suppression	-.06	.71**	—				
4 Fin. behaviour	.19	.48**	.23	—			
5 Bias proneness	-.30*	-.02	.06	-.14	—		
6 Fin. literacy	-.00	-.13	.06	.04	.10	—	
7 Risk tolerance	-.04	.25	.36**	.05	.05	.12	—

Note. * $p < .05$, ** $p < .01$. Martial-arts training (0/1) correlated non-significantly with all variables ($|r| \leq .17$) and is omitted for space.

4.4 Practitioners versus non-practitioners

No construct differed significantly between practitioners and non-practitioners on either the t-test or the Mann–Whitney test. The self-control difference favoured practitioners with a small-to-moderate effect ($d = 0.43$) but did not reach significance, which is the expected pattern when one group contains only 11

respondents. Financial management behaviour was almost identical across groups. Table 4 reports the comparison.

Table 4. Group comparison: practitioners (n = 11) versus non-practitioners (n = 49)

Variable	Pract. M (SD)	Non M (SD)	t	p	MWU p	d
Self-control	3.69 (0.55)	3.45 (0.56)	1.32	.207	.214	0.43
Cognitive reappraisal	4.12 (1.82)	3.83 (1.47)	0.50	.625	.848	0.19
Expressive suppression	3.43 (1.31)	3.53 (1.35)	-0.22	.825	.811	-0.07
Financial behaviour	3.41 (0.96)	3.42 (0.91)	-0.04	.971	.863	-0.01
Bias proneness	2.44 (0.63)	2.59 (0.58)	-0.75	.466	.525	-0.26
Financial literacy	2.64 (0.67)	2.39 (0.73)	1.09	.293	.246	0.34
Risk tolerance	2.68 (0.87)	2.59 (0.79)	0.32	.757	.737	0.11

4.5 Predicting disciplined financial behaviour

Financial management behaviour was regressed on self-control, cognitive reappraisal, financial literacy, and risk tolerance. The model was significant and explained about 29% of the variance, $F(4, 55) = 5.51$, $p < .001$. Cognitive reappraisal was the only significant predictor ($\beta = .31$, $p < .001$). Self-control showed a positive coefficient of similar magnitude that did not reach significance ($\beta = .31$, $p = .10$), while financial literacy and risk tolerance were unrelated to behaviour. Adding martial-arts training as a predictor left reappraisal unchanged and did not itself predict behaviour ($\beta = -.22$, $p = .43$). Table 5 reports the model.

Table 5. OLS regression predicting financial management behaviour (N = 60)

Predictor	B	SE	t	p
Constant	1.05	0.84	1.25	.219
Trait self-control	0.31	0.18	1.65	.104
Cognitive reappraisal	0.31	0.07	4.35	< .001
Financial literacy	0.15	0.15	0.99	.329
Risk tolerance	-0.09	0.14	-0.69	.492

Note. $R^2 = .29$, adjusted $R^2 = .23$, $F(4, 55) = 5.51$, $p < .001$.

4.6 Exploratory mediation

The indirect paths from martial-arts training to financial behaviour through self-control and through reappraisal were both positive but non-significant, with bootstrap confidence intervals that included zero (Table 6). With 11 practitioners, the mediation test has very low power, so these results are treated as descriptive rather than as a test of H5.

Table 6. Exploratory bootstrapped mediation (5,000 resamples)

Indirect path	Effect	95% CI	Result
Training → self-control → behaviour	0.077	[−0.039, 0.320]	Not significant
Training → reappraisal → behaviour	0.085	[−0.223, 0.475]	Not significant

4.7 Summary of hypothesis tests

Hypothesis	Outcome
H1 Training → self-control (+)	Not supported ($p = .21$; $d = 0.43$, underpowered)
H2 Training → reappraisal (+)	Not supported
H3 Self-control → behaviour (+)	Not supported at $\alpha = .05$ ($\beta = .31$, $p = .10$; positive trend)
H4 Reappraisal → lower bias (−)	Inconclusive (bias scale unreliable, $\alpha = .27$)
H5 Mediation via self-regulation	Not supported (underpowered)
H6 Financial literacy → behaviour (+)	Not supported ($p = .33$)
Emergent: reappraisal → behaviour (+)	Supported ($\beta = .31$, $p < .001$; $r = .48$)

5. Discussion

The clearest result is that cognitive reappraisal, rather than knowledge or stated risk appetite, accompanied disciplined financial behaviour. Reappraisal correlated with financial management behaviour at $r = .48$ and remained the sole significant predictor once self-control, literacy, and risk tolerance were held constant. This extends Richards et al. (2018), who linked reappraisal to a weaker disposition effect among investors, into a new setting and outcome, and it fits the wider argument that the way people manage feeling, not only what they know, governs financial conduct (Finet et al., 2025). For a sample of experienced, affluent investors, the finding is notable: even among those with years in the market, an adaptive emotion-regulation style tracked more disciplined behaviour.

Self-control behaved as theory would predict but more weakly. Its coefficient in the regression matched reappraisal in size yet fell short of significance, and it correlated with lower bias-proneness. Read together with Strömbäck et al. (2017), the pattern suggests self-control is part of the picture, with the present sample too small to resolve an effect of this size. Financial literacy was unrelated to behaviour, consistent with the recurring observation that literacy and conduct diverge once affect enters (Lusardi & Mitchell, 2014). Martial-arts training showed no significant association with any construct. The honest reading is not that no relationship exists but that this pilot could not detect one. The self-control difference favoured practitioners at $d = 0.43$, a small-to-moderate effect that would need roughly 85 respondents per group to detect with conventional power; with 11 practitioners, a null result was the likely outcome regardless of any true effect. The direction of the self-control and literacy differences is at least consistent with the training hypothesis, and the value of the pilot lies in supplying these estimates rather than in adjudicating the question.

Two measurement observations carry forward. The bias-proneness items did not cohere ($\alpha = .27$), which likely reflects that disposition-style behaviours, panic selling, and recovery trading are distinct tendencies rather than one trait; future work should separate them or adopt an established scale. The strong correlation

between reappraisal and suppression ($r = .71$), unusual against the near-independence typically reported, may stem from the small sample or from how the seven-point items were read locally, and warrants attention in a larger study.

6. Implications

For theory, the results point to emotion-regulation strategy as a specific and measurable link between psychology and financial conduct, and they encourage behavioural-finance models to treat reappraisal as more than a background trait. For practice, they suggest that investor education framed only around knowledge may miss what separates disciplined investors from reactive ones. Advisers and financial educators could pair literacy content with simple reappraisal techniques for handling market stress, and could screen for reactivity when profiling clients. For method, the study contributes a validated, deployable instrument and a clean analysis protocol, together with effect-size estimates that let a future study be sized correctly.

7. Limitations and future research

The limitations are substantial and shape how much weight the findings can bear. The analytic sample was small ($N = 60$) and the martial-arts subgroup very small ($n = 11$), which leaves the training hypotheses and the mediation underpowered. Recruitment was non-probability and reached an older, affluent, business-owning segment rather than a cross-section of retail investors, which limits generalisation. The design is cross-sectional, so no causal claim is warranted, and self-selection into martial arts and reverse causation cannot be ruled out. All measures were self-reported, raising the possibility of common-method and social-desirability effects, and two author-developed scales underperformed. A confirmatory study should recruit a larger, balanced, and more representative sample (on the present estimates, on the order of 85 practitioners and 85 non-practitioners), consider longitudinal or quasi-experimental designs, replace or strengthen the bias and risk measures, and where possible supplement self-report with observed trading behaviour.

8. Conclusion

Among retail investors in Ahmedabad, cognitive reappraisal was the capacity most closely associated with disciplined financial behaviour, ahead of self-control, financial literacy, and risk tolerance. Trait self-control showed a positive trend and a link to lower bias-proneness. Martial-arts training was not significantly related to these capacities in this pilot, though small effects in the expected direction, together with the study's limited power, leave the question open rather than closed. Read as a pilot, the study offers preliminary evidence that how investors regulate emotion accompanies how they behave, and it provides the instrument, protocol, and effect-size estimates needed to test the martial-arts route in a properly powered study.

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