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The mediating role of parental reflective functioning on the relationship between strength-based parenting with health-oriented academic lifestyle behavior

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ABSTRACT

This research was conducted to test the hypothesized mediation model of parental reflective functioning on the relationship between strength-based parenting and the behaviors that shape the academic lifestyle of adolescents, including both productive and unproductive ones.

In this correlational research, 241 adolescents aged 12 to 18 years and their mothers who were selected using convenience sampling method participated. Adolescents responded to the Strength-Based Parenting Scale (Jach, Sun, Loton, Chin & Waters, 2018) and the Health-Oriented Academic Lifestyle Behavior Questionnaire (Salehzadeh, Shokri and Fatehabadi, 2016) and their mothers responded to the Reflective Parenting Functioning Questionnaire (Luyten, Mayes, Nijssens & Fonagy, 2017). The results indicated that the hypothesized model provided a good fit to the data. All the path coefficients between the observed variables (except for the direct effect of the pre-mentalization scale on the facilitating behaviors of the academic lifestyle) were statistically significant. They accounted for 17% and 22% of the variance in the scores of facilitators and inhibitors of the academic lifestyle, respectively, through strength-based parenting and reflective parenting. In sum, the results, consistent with the positions derived from the theory of ecological systems, showed that in the microsystem of parenting, reflection - as a metacognitive ability - is one of the mechanisms that through it, positive parenting behaviors or positive parenting, explains the possibility of the increase in the use of behavioral models that facilitate academic health and, of course, the decrease in referring to behavioral models that hinder academic health among adolescents.

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Introduction

A review of empirical evidence shows that in recent years, educational researchers guided by dominant concerns in theoretical models of academic motivation have prioritized the motivational underpinnings of learners' behavioral profiles when facing academic demands (Azmal & Shokri, 2024; Koushki et al., 2023). In other words, a central question for educational researchers has always been why learners show different behavioral profiles primarily shaped by their motivational structures after experiencing academic settings (Graham, 2020). Inspired by convergent principles across contemporary achievement motivation theories such as attribution theory, self-worth theory, self-efficacy theory, expectancy-value theory, self-determination theory, achievement goal theory, and will, motivation and performance theory (Hattie et al., 2020)—Salehzadeh et al. (2016) developed the motivational construct of health-oriented academic lifestyle behaviors to provide a sufficient and exploratory understanding of learners' motivational profiles in academic contexts.

Within this conceptual framework, academic lifestyle behaviors consistent with recent advances in the theoretical knowledge base of achievement motivation offer a motivational lens combining both adaptive and maladaptive markers, and serve as a safe informational base for describing and explaining the emergence of constructive or disruptive learner engagement in educational settings (Salehzadeh et al., 2016b). Therefore, grounded in motivational theory and in agreement with other empirical findings, this framework identified behaviors such as learned helplessness, academic procrastination, self-handicapping, maladaptive perfectionism, academic resilience, academic optimism, and mastery-oriented goal-setting as the most typical motivational manifestations that shape learner presence in academic environments (Ataei et al., 2023; Kheradmand & Shokri, in press).

According to a broad spectrum of studies, one of the prevailing theoretical approaches to understanding academic functioning in learners relies on the ecological systems theory (Bronfenbrenner, 1999). Educational researchers have sought to explain differentiation in learners' academic functioning by referencing various structural levels in the ecological model. At the microsystem level, Bronfenbrenner's framework places strong emphasis on the parenting context as integral to adolescents' achievement-oriented efforts a focus that remains central across multiple studies (Garn et al., 2010; Waters et al., 2019; Ardeshir Larijani et al., 2021; Almasi et al., 2023; Arslan et al., 2022). While considerable research over the past decades has explored the interpretive capacities of parenting in understanding correlates and determinants of learners' academic lives, the emergence of the positive psychology movement has recently inspired a new perspective most notably through the work of Waters (2015a, 2015b) who introduced the concept of strength-based parenting.

Strength-based parenting, as a positive parenting style, centers on recognizing and cultivating children's and adolescents' positive traits, emotional states, and psychological processes (Waters, 2020). It primarily emphasizes strategies that enable parents to identify and foster their children's psychological strengths (Waters et al., 2022). Evidence suggests that focusing on such strengths enables young people to draw more actively on them (Waters & Sun, 2016). For example, research indicates a link between psychological strengths and higher well-being and life satisfaction in adolescents. (Jach et al., 2018). Furthermore, strength-based parenting has been linked to a wide range of positive developmental outcomes including posttraumatic growth and subjective well-being (Zavala & Waters, 2020; Zavala et al.,2022), perseverance, enthusiasm, and higher academic functioning (Donato & Bertoni, 2017), psychological resilience, grit, and happiness (Ardeshir Larijani et al., 2021), emotional-social wellbeing and school connectedness (Sagkal, 2019; Sagkal& Ozdemir, 2019; Waters et al., 2019), as well as stronger self-efficacy and lower psychological distress (Loton & Waters, 2018; Amani et al., 2020). Studies such as those by Arslan et al. (2022), Waters (2020), Larijani et al. (2021), and Amani et al. (2020) highlight the functional attributes of strength-based parenting in promoting achievement-related behaviors among adolescents. Nonetheless, reviewing the literature on strength-based parenting and academic functioning reveals a conceptual gap: the need to unpack the mechanisms through which the beneficial effects of strength-based parenting on

adolescents' academic engagement unfold. In other words, a key question arising from such investigations is: What are the conceptual mechanisms that explain the role of strength-based parenting in shaping the academic conduct of adolescent learners?

Contemporary theories of socialization view both children and parents as active agents, emphasizing the bidirectional nature of parent–child interactions (Shai et al., 2023; Movahednezhad et al., 2022). These theories also highlight the capacity of children and parents to reflect on their own and each other's behaviors, and construct meaning and expectations around their relationships (Øie et al., 2020). Building on this, Fonagy and Target (1997) introduced the construct of reflective functioning as a key parental trait. Reflective functioning refers to the metacognitive ability to think about one's own and others' mental states such as beliefs, emotions, desires, and needs and use this understanding to anticipate behavior (Benbasat & Peril, 2012). This capacity plays a critical role in shaping individuals' self-concept and significant relationships (Moser et al., 2019), incorporating both an intrapersonal dimension (e.g., self-awareness) and an interpersonal dimension (e.g., recognizing others as psychologically distinct beings) (Gur et al., 2023)., Reflective functioning encompasses both a cognitive process requiring psychological insight and perspective-taking—and an emotional process requiring non-defensive regulation of emotions in the self and others (Dehghan et al., 2023).

This study builds on findings from Amani et al. (2020) and Dehghan et al. (2023), proposing that a key mechanism through which strength-based parenting influences adolescents' achievement behaviors is via parental reflective functioning. This concept, also called parental mentalization, involves parents reflecting on their own mental states and those of their children (Dehghan et al., 2022). Specifically, it denotes the capacity of parents or caregivers to see children and adolescents as beings with internal mental states including emotions, desires, and preferences (Shai et al., 2023). As Fonagy et al. (2015) explain, parental reflective functioning develops when parents focus on their internal experiences and recognize how these are influenced by interactions with their children.

Studies have shown inverse relationships between parental reflective functioning and various forms of parental maltreatment (Stuhrmann et al., 2022), as well as positive associations between parental reflective functioning and positive parenting behaviors (Anis et al., 2020). Such findings suggest that parents who adopt a positive parenting approach while also possessing higher parental reflective functioning tend to engage more collaboratively with their children, report increased parental satisfaction and efficacy, and contribute meaningfully to their children's adaptive development. Therefore, parental reflective functioning, as a foundational aspect of parental competence, plays an indispensable role in explaining the functional attributes of strength-based parenting in parent–child and parent–adolescent dynamics (Madsen et al., 2023).

This study, grounded in Bronfenbrenner's ecological systems theory (1999), aims to explore the mechanisms behind how strength-based parenting predicts adolescents' academic behaviors, both productive and unproductive. It proposes and tests a partial mediation model in which parental reflective functioning acts as an intermediary between strength-based parenting and health-focused academic lifestyle behaviors (see Figure 1).

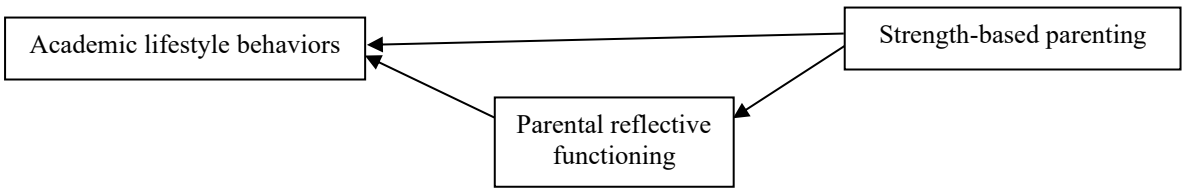

Figure 1. Path diagram of the hypothesized mediation model

Method

In this correlational study, a total of 241 adolescents [138 boys with a mean age of 13.70 years (SD = 0.68, range: 12–15), and 103 girls with a mean age of 14.21 years (SD = 1.02, range: 12–16)] and their mothers, selected through convenience sampling, participated. Of the students, 20 (8.3%) were in sixth grade, 22 (9.1%) in seventh grade, 157 (65.1%) in eighth grade, 13 (5.4%) in ninth grade, and finally, 29 (12%) in tenth grade. According to the logic proposed by Kline (2015), one of the most common methods for estimating sample size in statistical procedures based on causal modeling such as structural equation modeling and path analysis with a model-fitting approach—is to ensure a correspondence between the number of parameters estimated and the number of participants. In this study, 16 parameters were tested in the proposed model. Therefore, based on the 15-to-1 rule, 15 participants were selected per parameter. No participants were excluded during the data screening phase.

Tools Used

Health-Oriented Academic Lifestyle Behavior Questionnaire

Salehzadeh et al. (2016a) developed this questionnaire, inspired by principles extracted from contemporary achievement motivation theories, to assess facilitating and inhibiting behaviors related to a health-oriented academic lifestyle in learners. In the original version, the facilitating section comprises 48 items with a multidimensional structure including academic optimism, academic engagement, mastery goal orientation, academic vitality, and academic resilience. The inhibiting section comprises 76 items, encompassing learned helplessness, help-seeking avoidance, passive-aggressive behavior, academic procrastination, self-handicapping, effort avoidance, academic dishonesty, and maladaptive perfectionism. Participants respond to each item on a 5-point scale, ranging from "strongly disagree" (1) to "strongly agree" (5). In the study by Salehzadeh et al. (2016a), Cronbach's alpha values for the facilitating dimensions were as follows: academic optimism (0.89), academic engagement (0.85), mastery goal orientation (0.93), academic vitality (0.93), and academic resilience (0.93); for the inhibiting dimensions: learned helplessness (0.92), help-seeking avoidance (0.94), academic procrastination (0.93), self-handicapping (0.90), effort avoidance (0.95), academic dishonesty (0.96), and maladaptive perfectionism (0.95). In the present study, the internal consistency coefficients were .78 for facilitating behaviors and .84 for inhibiting behaviors.

Strength-Based Parenting Scale

Based on Waters' (2015a, 2015b) approach to strength-based parenting, Jach et al. (2018) developed the Strength-Based Parenting Scale. This scale comprises 14 items, each rated on a seven-point scale ranging from 'strongly disagree' (1) to 'strongly agree' (7). The scale comprises two subscales: Strength Knowledge and Strength Use, each with seven items. Various studies have supported the technical validity and reliability of this scale (Jach et al., 2018; Ardeshir Larijani et al., 2021). Jach et al. (2018) confirmed the two-factor structure through factor analysis, reporting internal consistency coefficients of .95 for both subscales. In the study by Ardeshir Larijani et al. (2021), these coefficients were 0.94 and 0.94, respectively. In the present study, the internal consistency coefficient for the overall scale was 0.92.

Parental Reflective Functioning Questionnaire

Luyten et al. (2017) developed the Parental Reflective Functioning Questionnaire, which aims to assess parental mentalization. This questionnaire consists of 18 items, with participants responding to each item on a five-point Likert scale. In Luyten et al.'s (2017) study, factor validity analysis revealed that the questionnaire comprises three factors: pre-mentalizing modes, certainty about mental states, and interest and curiosity in mental states. The psychometric properties of the Parental Reflective Functioning Questionnaire, including validity and reliability, have been supported by various studies (Luyten et al., 2017; Mousavi & Bahrami Ehsan, 2020).In Leutens et al.'s (2017) study, internal consistency coefficients for the pre-mentalizing, certainty about mental states, and interest and curiosity in mental states scales were 0.70, 0.82, and 0.75, respectively. Mousavi and Bahrami Ehsan's study (2020) empirically confirmed the three-

factor structure of the questionnaire pre-mentalizing, interest and curiosity in mental states, and certainty about mental states through factor validity analysis. In the present study, the internal consistency coefficients for the pre-mentalizing, interest, and curiosity in mental states, and certainty about mental states scales were found to be 0.80, 0.76, and 0.72.

Results

Table 1 presents the descriptive statistics of the study variables.

Table 1. Descriptive statistics for mean, standard deviation, skewness, and kurtosis of study variables

Variable	Mean	SD	Skewness	Kurtosis
Strength-Based Parenting	30.68	10.66	0.53	–0.19
Pre-Mentalization Scale	23.07	5.24	–0.55	–0.46
Interest and Curiosity about Mental States	12.64	4.05	0.60	0.30
Certainty about Mental States	9.02	2.98	0.67	0.67
Facilitating Health-Oriented Academic Lifestyle Behaviors	27.88	7.59	0.56	0.28
Inhibiting Health-Oriented Academic Lifestyle Behaviors	39.68	10.88	–0.30	0.55

Table 2 shows the correlation matrix of the study variables. The results indicate that the correlations between Strength-Based Parenting and both Pre-Mentalization and Inhibiting Health-Oriented Academic Lifestyle Behaviors were negative and significant, while its correlations with Interest and Curiosity about Mental States, Certainty about Mental States, and Facilitating Health-Oriented Academic Lifestyle Behaviors were positive and significant. Additionally, the correlation between pre-Mentalization and facilitating behaviors was negative and significant, and its correlation with inhibiting behaviors was positive and significant. Furthermore, the correlations of both Interest and Curiosity and Certainty about Mental States with Facilitating behaviors were positive and significant, while with Inhibiting behaviors, they were negative and significant.

Table 2. Correlation matrix of study variables

	1	2	3	4	5	6
1. Strength-Based Parenting	1	–0.24**	0.31**	0.34**	0.39**	–0.35**
2. Pre-Mentalization Scale		1	–0.36**	–0.30**	–0.21*	0.30**
3. Interest and Curiosity			1	0.55**	0.21**	–0.33**
4. Certainty about Mental States				1	0.28**	–0.37**
5. Facilitating Academic Lifestyle					1	–0.37**
6. Inhibiting Academic Lifestyle						1

** **p**< 0.01

In this study, prior to applying the statistical method of path analysis with a model fit approach, the assumptions of univariate normality were assessed during the data screening phase, following the guidelines

of Kline (2015) and Myers et al. (2016), by examining skewness and kurtosis statistics. The assumption of residual normality was evaluated using normal probability plots for the standardized residuals of the variables related to facilitative/inhibitory behaviors in health-oriented academic lifestyle. Multicollinearity was examined using tolerance statistics and the variance inflation factor (VIF). Finally, the assumption of homoscedasticity was tested and confirmed by scatterplots of standardized predicted values against standardized residuals for the variables representing facilitative/inhibitory behaviors in health-oriented academic lifestyle.

This section explains the distribution pattern of scores on Facilitating/Inhibiting Health-Oriented Academic Lifestyle Behaviors through Strength-Based Parenting, mediated by Parental Reflective Functioning in adolescents. Path analysis with a model-fitting approach was used. Researchers, fully aware of the theoretical and methodological considerations involved in testing the causal relationship, focused on two key decisions. First, because of the functional convergence of the subscales "Interest and Curiosity about Mental States" and "Certainty about Mental States" and to prevent unnecessary complexity these variables were combined into a single composite score instead of treating them as separate indicators. Second, since the direct effect of Pre-Mentalization on Facilitating Academic Lifestyle Behaviors was not significant, that path was removed to improve model fit with the data. Figure 2 shows the results of the mediation model testing Parental Reflective Functioning's role in the relationship between Strength-Based Parenting and Facilitating/Inhibiting Health-Oriented Academic Lifestyle Behaviors in adolescents.

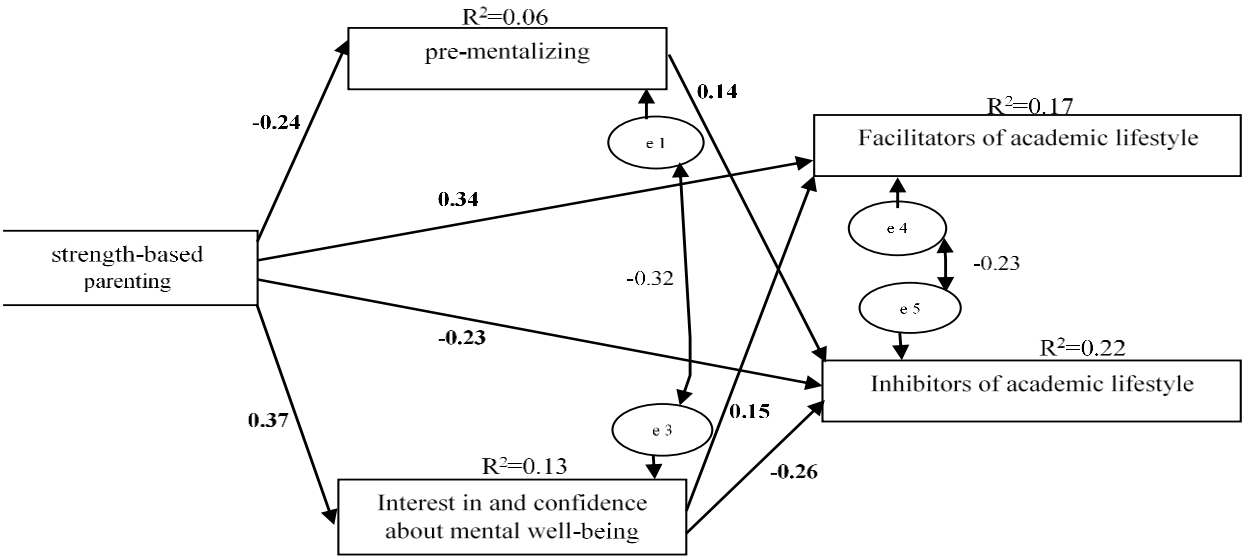

Figure 2. The Partial Mediation Model in Adolescents

In this section, the results for the fit indices of the proposed model in adolescents, including the Chi-square index (χ^2), Chi-square divided by degrees of freedom (χ^2/df), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), and Root Mean Square Error of Approximation (RMSEA), were 1.92, 1.92, 0.995, 0.997, 0.95, and 0.062 respectively. According to Meyers et al. (2016), these values indicate an acceptable model fit with the data in adolescents.

Figure 2 shows that in the proposed model, 6% of the variance in the pre-mentalizing variable scores and 13% of the variance in the scores of the variables of interest, curiosity about mental status, and confidence in mental status were explained through strength-based parenting. Furthermore, in this model, the results

showed that 17% of the variance in the variable scores of facilitative behaviors in a health-oriented academic lifestyle and 22% of the variance in the variable scores of inhibitory behaviors in a health-oriented academic lifestyle were explained through strength-based parenting and parental reflective function scales. In the proposed partial mediation model, all path coefficients between variables (except for the path coefficient related to the direct effect of the pre-mentalizing variable on facilitative behaviors in a health-oriented academic lifestyle) were statistically significant ($p < 0.05$).

In this study, the bootstrap method was used to determine the statistical significance of the indirect effect of strength-based parenting on facilitative/inhibitory behaviors of a health-oriented academic lifestyle in adolescents. In this model, the indirect effect of strength-based parenting on facilitative/inhibitory behaviors of a health-oriented academic lifestyle through interest and curiosity about mental status and confidence in mental status was obtained as 0.06 and -0.13, respectively, both of which were statistically significant ($p < 0.05$). Furthermore, the indirect effect of strength-based parenting on inhibitory behaviors of a health-oriented academic lifestyle through pre-mentalizing was obtained as -0.04, which was also statistically significant ($p < 0.05$). Finally, the indirect effect of strength-based parenting on facilitative behaviors of a health-oriented academic lifestyle was found to be 0.01, which was not statistically significant ($p > 0.05$).

Discussion & Conclusion

This study aimed to examine the mediating role of Parental Reflective Functioning in the relationship between Strength-Based Parenting and Facilitating/Inhibiting Health-Oriented Academic Lifestyle Behaviors in adolescents. Results from the path analysis, employing a model-fitting approach, indicated that the proposed mediation model provided a good fit with the data.

In alignment with studies by Ardeshir Larijani et al. (2021), Almasi et al. (2023), and Arslan et al. (2022), and inspired by ecological systems theory (Bronfenbrenner, 1999), the researchers emphasized the interpretive power of the parenting context in explaining Facilitating/Inhibiting Academic Lifestyle Behaviors among adolescents. The results also aligned with findings from Waters et al. (2019), Waters & Johnson (2022), and Waters et al. (2021), which support the explanatory role of the parenting environment in adolescent functioning in response to academic demands. The findings show that, in line with self-determination theory (Ryan & Deci, 2020; Deci & Ryan, 2008), positive parenting practices such as nurturing core psychological needs, valuing adolescents' voices, avoiding controlling or intrusive actions, and practicing sensitive caregiving help adolescents develop Facilitating behaviors like academic optimism, resilience, and enthusiasm. These practices also help reduce Inhibiting behaviors like learned helplessness, procrastination, and maladaptive perfectionism (Garn et al., 2010).

These findings support results from Amani et al. (2020), Dehghan et al. (2022), Madsen et al. (2023), Benbasat & Peril (2012), and Fonagy et al. (2015), and confirm the functional relevance of Parental Reflective Functioning in explaining achievement-oriented adolescent behavior in educational contexts. Specifically, consistent with findings from Waters et al. (2019), Waters & Johnson (2022), and Waters et al. (2021), this study empirically supports the explanatory role of Parental Reflective Functioning in how positive parenting behaviors influence learners' motivational profiles in academic settings. The results indicate that Parental Reflective Functioning by promoting positive parenting behaviors, such as parental sensitivity and involvement, and reducing negative parenting tendencies, including lack of sensitivity, negativity, overcontrol, and intrusive interventions enhances motivational indicators in adolescent academic life (Garn et al., 2010). According to existing evidence, another conceptual pathway through which Parental Reflective Functioning mediates the relationship between Strength-Based Parenting and adolescents' productive and unproductive academic behaviors involves enhancing indicators of parental competence. Studies have shown that one of the core descriptors of parental competence is rooted in the characteristics of Parental Reflective Functioning and its correlates, such as positive parenting behaviors (Segal, 2019; Jach et al., 2018). These studies emphasize that parental competence comprising dimensions like parental warmth, parental expectations, realistic demands, self-care, involvement, and support along with promotion of positive parenting behaviors such as cooperative engagement and empathetic responsiveness, substantiate

the explanatory role of Strength-Based Parenting in the healthy development of children and adolescents across both academic and non-academic domains (Donato & Bertoni, 2017; Amani et al., 2020; Arslan et al., 2022).

This study has several limitations. First, participants were selected non-randomly, which restricts the generalizability of the findings. Second, the study design was cross-sectional. To strengthen confidence in causal inference from the proposed models, longitudinal studies and repeated measurement of variables over time are recommended. Third, although both male and female adolescents participated, a moderation analysis based on the demographic variable of gender was not performed. It is recommended that future studies investigate gender-related capacities to enhance domain-specific technical knowledge.

In conclusion, the results, aligned with principles from ecological systems theory, showed that in the parenting microsystem, reflective capacity as a metacognitive skill is one of the mechanisms through which positive parenting behaviors lead to increased engagement in academic health-facilitating behaviors and reduced use of academic health-inhibiting behaviors among adolescents.

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