



Voluntary Sunnah Fasting and Student Self-Regulation: Associations with Patience and Delayed Gratification in Islamic Boarding School Education

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Abstract

Self-regulation is widely recognized as a key competency supporting students' learning, character development, and long-term educational success. Within Islamic boarding schools, voluntary religious practices may provide repeated opportunities for students to strengthen self-regulatory capacities through everyday behavioral discipline. However, empirical evidence examining voluntary sunnah fasting from an educational psychology perspective remains limited. This study investigated the associations between voluntary sunnah fasting, patience, and delayed gratification among students in an Islamic boarding school. A quantitative cross-sectional design was employed involving 60 students selected through purposive sampling. Data were collected using self-report questionnaires and analyzed using descriptive statistics, Pearson's correlation, and simple linear regression. The findings indicated that voluntary sunnah fasting was positively associated with patience ($\beta = .529, p < .001$) and delayed gratification ($\beta = .535, p < .001$). Regression analyses further showed that voluntary sunnah fasting significantly predicted patience ($R^2 = .280$) and delayed gratification ($R^2 = .286$). These findings suggest that students who more consistently engage in voluntary sunnah fasting tend to demonstrate stronger emotional regulation and greater capacity to delay immediate rewards in pursuit of longer-term goals. The study contributes to educational psychology by positioning voluntary sunnah fasting as a behavioral practice that may support students' self-regulation and character development within Islamic boarding school education. Future research employing longitudinal and intervention-based designs is recommended to examine the educational implications of these relationships across broader learning contexts.

Keywords: character development; delayed gratification; Islamic boarding school; patience; self-regulation; voluntary sunnah fasting

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INTRODUCTION | مقدمة

Developing students' self-regulation has become one of the central goals of contemporary education because it supports learning engagement, emotional adjustment, responsible decision-making, and long-term academic success. During adolescence, these competencies become increasingly important as students encounter greater academic demands, expanding social relationships, and heightened sensitivity to immediate rewards (Fahrezi et al., 2026; Musonif et al., 2026; Ramadona et al., 2026; Steinberg, 2014). Consequently, successful adaptation during adolescence depends not only on cognitive competence but also on the ability to intentionally direct behavior in accordance with personally valued objectives. Within educational psychology, self-regulation is therefore regarded as a fundamental psychological process underlying academic achievement, emotional adjustment, adaptive decision-making, and positive developmental outcomes (Azis et al., 2026; Duckworth et al., 2020; Musonif & Azis,

2026; Zimmerman, 2000). Recent developmental perspectives further emphasize that self-regulation is neither a fixed personality trait nor solely a biologically determined capacity. Instead, it develops dynamically through continuous interactions between individual characteristics and sociocultural experiences, suggesting that repeated behavioral practices may gradually strengthen adolescents' regulatory capacities over time (Messer et al., 2025; Musonif & Misbah, 2026; Saifudin et al., 2026).

Although self-regulation and self-control are often used interchangeably, contemporary psychological literature distinguishes these constructs conceptually. According to Bandura (1991) Social Cognitive Theory, self-regulation refers to the broader process through which individuals monitor, evaluate, and modify their behavior in relation to personal goals and internal standards. This process involves continuous cycles of self-observation, self-evaluation, and behavioral adjustment that enable individuals to respond adaptively to changing environmental demands. Expanding this perspective, Masaki (2023) argues that self-regulation should also be understood as a sociocultural developmental process shaped by educational experiences, cultural practices, and social interactions. In contrast, self-control represents a specific regulatory capacity operating within this broader self-regulatory system. Rather than describing the entire process of behavioral regulation, self-control refers to an individual's capacity to inhibit immediate impulses and maintain behaviors that support long-term goals (Gillebaart, 2020). Moreover, recent evidence suggests that effective self-control is not merely the ability to resist temptation through effortful inhibition. Individuals with higher self-control are more likely to establish adaptive habits and organize their environments in ways that reduce conflicts between immediate desires and long-term goals, thereby making self-regulation more efficient and sustainable (Fahrezi et al., 2026; Galla & Duckworth, 2021; Musonif et al., 2026). This distinction is particularly relevant in educational settings because repeated learning experiences and daily behavioral routines provide opportunities for students to strengthen self-control within broader self-regulatory processes.

Within this framework, patience and delayed gratification represent two related but distinct manifestations of effective self-regulation. Patience primarily reflects the capacity to regulate emotional responses, tolerate frustration, and maintain psychological stability when confronted with adversity or prolonged uncertainty (Al Jardali et al., 2026; Goncalves et al., 2023; Schnitker, 2012). By contrast, delayed gratification refers to the voluntary postponement of immediate rewards in favor of more valuable future outcomes, reflecting the regulation of reward-oriented decision-making (Bembenutty & Karabenick, 1998). Although both constructs involve impulse inhibition, they represent different dimensions of regulatory functioning: patience emphasizes emotional regulation under challenging circumstances, whereas delayed gratification emphasizes strategic regulation of reward-seeking behavior. Contemporary evidence indicates that stronger self-control is consistently associated with greater persistence, improved frustration tolerance, and a stronger orientation toward long-term goals (Duckworth et al., 2020; Tangney et al., 2004). Accordingly, examining patience and delayed gratification simultaneously provides a more comprehensive understanding of how repeated self-regulatory experiences may contribute to adolescents' psychological development. In educational contexts, these competencies enable students to persist in learning tasks, manage academic frustration, and prioritize long-term learning goals over immediate gratification.

From the perspective of educational psychology, repeated behavioral experiences that require students to regulate impulses may contribute to the development of self-regulation over time. One behavioral practice that theoretically embodies these characteristics is voluntary

fasting. Unlike externally imposed restrictions, voluntary fasting requires individuals to intentionally refrain from satisfying basic physiological needs despite the continuous presence of internal motivational cues. Such behavior demands sustained self-monitoring, inhibitory control, and goal-directed persistence, making fasting a naturally occurring context for exercising self-regulatory processes. Consequently, voluntary fasting can be conceptualized as a form of repeated behavioral self-regulation, in which individuals repeatedly practice aligning their behavior with personally meaningful goals rather than immediate biological rewards.

This psychological interpretation is increasingly supported by contemporary empirical evidence. Beyond its established physiological and metabolic effects, fasting has been associated with improvements in emotional well-being and psychological functioning through mechanisms involving stress regulation, neuroendocrine adaptation, and behavioral control (Hasanah et al., 2026; Musonif et al., 2026; Wang & Wu, 2022). A systematic review and meta-analysis further indicated that structured fasting interventions were associated with lower levels of anxiety and depressive symptoms without increasing fatigue, suggesting that fasting may contribute to adaptive psychological functioning rather than merely improving physical health (Berthelot et al., 2021; Kurniawan et al., 2026; Maharani & Musonif, 2026). Nevertheless, the psychological effects of fasting should not be interpreted as uniformly positive. Experimental evidence demonstrates that temporary self-deprivation during Ramadan may impair cognitive control when individuals are simultaneously exposed to salient food-related cues, particularly during active fasting periods (Patterson & Sears, 2017; Rad et al., 2023; Trepanowski & Bloomer, 2010). Rather than contradicting the self-regulation perspective, these findings illustrate that fasting creates genuine self-regulatory demands by requiring individuals to continuously manage conflicts between immediate physiological impulses and higher-order goals. Accordingly, fasting represents a psychologically meaningful behavioral context in which self-regulatory processes are repeatedly activated and exercised.

A complementary perspective is provided by research on religiosity and self-control. Reviewing evidence from experimental and longitudinal studies, Marcus & McCullough (2021) concluded that the development of self-control is more consistently associated with sustained participation in religious practices and environments than with religious cognition alone. This distinction suggests that recurring religious behaviors may contribute to regulatory development because they repeatedly engage individuals in goal-directed behavioral regulation. Within this framework, voluntary sunnah fasting constitutes a particularly relevant form of repeated self-regulatory practice. Unlike Ramadan fasting, which is obligatory for eligible Muslims, sunnah fasting is voluntarily initiated and maintained through intrinsic commitment. Its continuation therefore depends on self-directed behavioral regulation rather than external obligation, making it theoretically suitable for examining how repeated religious practice may be associated with the development of patience and delayed gratification. These characteristics also make voluntary sunnah fasting relevant for educational environments that aim to cultivate students' character and self-regulated learning through habitual practice.

This perspective is particularly relevant in Islamic boarding schools (*pesantren*), where religious practices are systematically integrated into learning routines, student discipline, and character education. In addition to formal instruction, students are routinely engaged in structured activities that encourage behavioral discipline, emotional restraint, and personal responsibility. From a sociocultural perspective, such educational environments provide repeated opportunities for adolescents to develop regulatory competencies through the interaction of individual behavior and cultural practice (Baeti et al., 2026; Masaki, 2023; Messer

et al., 2025; Musonif et al., 2026). Importantly, the present study does not assume that voluntary sunnah fasting directly or automatically enhances psychological functioning. Rather, it is conceptualized as one recurring behavioral practice that may be associated with adolescents' regulatory development through repeated engagement in self-regulatory processes.

Despite growing scholarly interest in fasting, important theoretical and empirical gaps remain regarding its psychological significance. Existing research has predominantly examined fasting from physiological, metabolic, and clinical perspectives, emphasizing outcomes such as metabolic regulation, disease prevention, and physical health (Albosta & Bakke, 2021; Nur Azizah, 2026; Nuryamin et al., 2026; Wang & Wu, 2022). Although these studies demonstrate the biological benefits of fasting, they provide limited explanation of how repeated fasting behavior may relate to the development of self-regulatory capacities. Moreover, psychological studies have primarily focused on Ramadan fasting and its short-term effects on mood or cognitive performance (Berthelot et al., 2021; Hauser, 2019; Rad et al., 2023), leaving limited evidence regarding whether voluntary sunnah fasting, which is intrinsically motivated and repeatedly practiced, is associated with broader dimensions of adolescent self-regulation. Existing studies have also tended to emphasize global indicators of self-control or psychological well-being, whereas the potentially distinct roles of patience and delayed gratification as complementary manifestations of self-regulation remain insufficiently examined. Furthermore, empirical evidence integrating contemporary self-regulation theory with voluntary religious practices among adolescents in Islamic boarding schools remains scarce.

To address these gaps, the present study reconceptualizes voluntary sunnah fasting as a repeated behavioral self-regulation practice embedded within the educational environment of an Islamic boarding school rather than viewing it solely as a religious ritual or a physiological practice. This perspective contributes to educational psychology by proposing that voluntary sunnah fasting functions as a naturally occurring behavioral educational practice through which students repeatedly exercise inhibitory control, goal-directed behavior, and self-discipline as part of their everyday learning experiences. Furthermore, this study distinguishes patience and delayed gratification as two theoretically related yet conceptually distinct dimensions of students' self-regulation, thereby providing a more comprehensive understanding of how repeated religious practices integrated into school life may support adolescents' self-regulation and character development. By linking contemporary self-regulation theory with the educational context of Islamic boarding schools, this study extends current research beyond the psychological and physiological consequences of fasting toward its potential educational significance for fostering students' personal and character development.

Accordingly, this study aims to examine the associations between voluntary sunnah fasting, patience, and delayed gratification among students enrolled in an Islamic boarding school. Drawing upon Social Cognitive Theory (Bandura, 1991) and contemporary perspectives on self-regulation and self-control (Galla & Duckworth, 2021; Gillebaart, 2020; Panakaje et al., 2026), the study proposes that greater engagement in voluntary sunnah fasting will be positively associated with higher levels of patience and delayed gratification. Given the cross-sectional nature of the research design, the findings are interpreted as evidence of theoretically grounded associations rather than causal relationships. By integrating contemporary self-regulation theory with the psychological study of voluntary religious practice, this study contributes primarily to educational psychology and character education by explaining how repeated religious practices embedded in school routines may support students' self-regulatory development.

METHOD

منهج

Research Design

This study employed a quantitative cross-sectional explanatory design to examine the associations between voluntary sunnah fasting and two educationally relevant dimensions of students' self-regulation, namely patience and delayed gratification, among students at Muhammadiyah Boarding School (MBS) Zamzam Cilongok, Indonesia. A quantitative approach was selected because the study aimed to empirically test theoretically derived relationships among measurable psychological constructs using standardized instruments and inferential statistical analyses (Creswell & Creswell, 2018). The study was situated within the field of educational psychology because it examined students' self-regulatory capacities as educational outcomes relevant to character development and learning. Given the cross-sectional nature of the study, the findings were interpreted as associative rather than causal. Accordingly, voluntary sunnah fasting was specified as the predictor variable, whereas patience and delayed gratification were treated as the outcome variables.

Participants and Sampling

The study was conducted at Muhammadiyah Boarding School (MBS) Zamzam Cilongok, an Islamic boarding school where students routinely participate in structured religious and educational activities. This setting was considered appropriate because religious practices are systematically integrated into students' daily learning routines, character education, and school discipline, providing a meaningful educational context for examining students' self-regulation. Islamic boarding schools represent distinctive educational environments where academic learning and character formation are intentionally integrated through structured daily practices.

Participants were selected using purposive sampling, as the study required respondents who met predefined inclusion criteria. Eligible participants were active students who had experience practicing voluntary sunnah fasting and agreed to participate voluntarily in the research. Students who did not complete the questionnaire or provided incomplete responses were excluded from the analysis. A total of 60 students met the inclusion criteria and were included in the final dataset.

The final sample consisted of 60 male students enrolled at Muhammadiyah Boarding School (MBS) Zamzam Cilongok. Participants were adolescent students who were actively engaged in the school's integrated academic and religious education program and had experience practicing voluntary sunnah fasting.

Because the objective of the study was to examine theoretically relevant relationships rather than estimate population prevalence, purposive sampling was considered appropriate for obtaining participants whose experiences corresponded to the research objectives (Creswell & Creswell, 2018).

Measures

Data were collected using a self-administered questionnaire consisting of three constructs measured on a four-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). A four-point response format was adopted to reduce neutral-response tendencies and encourage respondents to indicate a clear position toward each statement.

a. Voluntary Sunnah Fasting

Voluntary sunnah fasting was operationalized as the consistency with which students practiced voluntary Islamic fasting as a form of self-directed behavioral discipline. The construct was measured using five items assessing behavioral consistency, commitment to fasting, regulation of biological impulses, and adherence to fasting practices. Item development was

informed by contemporary perspectives on self-regulation and self-control (Bandura, 1991; Gillebaart, 2020). Example items included "I consistently perform voluntary sunnah fasting" and "I remain committed to fasting despite experiencing hunger or physical discomfort."

b. Patience

Patience was operationalized as an individual's capacity to regulate emotional responses, tolerate frustration, and maintain behavioral stability under challenging circumstances. The construct was measured using seven items representing emotional regulation, frustration tolerance, emotional persistence, and impulse restraint. Representative items assessed students' ability to remain calm when facing difficulties and to control emotional reactions during challenging situations. Item development was guided primarily by Schnitker (2012) conceptualization of patience as a psychological regulatory capacity.

c. Delayed Gratification

Delayed gratification was defined as the ability to postpone immediate rewards in favor of more valuable long-term outcomes. The construct was assessed using eight items measuring reward postponement, future-oriented decision making, persistence toward long-term goals, and resistance to immediate temptation. Representative items assessed students' willingness to postpone immediate pleasure in order to achieve future academic and personal goals. Item development referred to the conceptual framework of academic delay of gratification proposed by Bembenutty & Karabenick (1998) and contemporary perspectives on self-control in educational settings (Duckworth et al., 2020).

d. Validity and Reliability

Prior to hypothesis testing, the questionnaire was evaluated for its psychometric quality. Item validity was assessed using item-total Pearson correlation, and items with significant positive correlations with their respective total scores were retained. Internal consistency reliability was evaluated using Cronbach's alpha. Item validity was evaluated using corrected item-total correlations, whereas internal consistency reliability was assessed using Cronbach's alpha coefficients. All retained items met the recommended validity criteria, and Cronbach's alpha values exceeded the recommended threshold of .70, indicating satisfactory internal consistency (Hair et al., 2021).

Research Procedure

Permission to conduct the study was obtained from the school administration before data collection commenced. Eligible students were informed about the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses. Participants completed the questionnaire anonymously during scheduled school sessions under the supervision of the researcher. Questionnaire completion required approximately 15–20 minutes. To reduce potential social desirability bias, respondents were informed that there were no correct or incorrect answers and were encouraged to answer each statement honestly according to their actual experiences.

Data Analysis

Data were analyzed using IBM SPSS Statistics. Descriptive statistics, including means, standard deviations, minimum values, and maximum values, were calculated to summarize the characteristics of each variable. Prior to hypothesis testing, the assumptions of linear regression were evaluated through tests of normality, linearity, and homoscedasticity. Because the study aimed to examine predictive associations between variables rather than causal effects, simple

linear regression was considered appropriate for testing the proposed research hypotheses.

Bivariate relationships between variables were initially examined using Pearson's correlation coefficient. Subsequently, simple linear regression analyses were performed to estimate whether voluntary sunnah fasting significantly predicted patience and delayed gratification. Regression coefficients (B and β), coefficients of determination (R^2), F statistics, and associated p -values were reported. Statistical significance was evaluated using a two-tailed alpha level of 0.05.

Ethical Considerations

Participation in the study was entirely voluntary. Respondents provided informed consent before completing the questionnaire and were assured that their identities would remain anonymous and that all information would be used solely for academic purposes. Data were analyzed and reported in aggregate form to protect participants' confidentiality throughout the research process. The study complied with institutional ethical guidelines for research involving human participants.

RESULT | نتائج

Overview of the Analysis

Data from 60 participants were analyzed in three sequential stages to address the research objectives. First, descriptive statistics were computed to summarize the distribution and central tendency of each study variable. Second, Pearson's correlation analysis was conducted to examine the bivariate associations between voluntary sunnah fasting, patience, and delayed gratification. Finally, simple linear regression analyses were performed to examine the associations between voluntary sunnah fasting and the two outcome variables while estimating the extent to which voluntary sunnah fasting explained variance in patience and delayed gratification.

Descriptive Statistics

Descriptive statistics were calculated to summarize the distribution of the study variables. As presented in Table 1, voluntary sunnah fasting had a mean score of 15.55 ($SD = 2.43$), with observed scores ranging from 11 to 20. Patience yielded a mean score of 22.50 ($SD = 2.17$), with scores ranging from 15 to 26, whereas delayed gratification had a mean score of 25.72 ($SD = 3.21$), with observed scores ranging from 16 to 31.

Overall, the descriptive results indicate moderate variability across all variables, suggesting sufficient score dispersion for subsequent correlational and regression analyses. No extreme score distributions were observed based on the minimum and maximum values, indicating that the responses adequately represented individual differences among participants. The observed variability suggests meaningful individual differences in students' fasting practices and self-regulatory capacities, providing an adequate basis for examining their associations in the educational context.

Table 1. Descriptive Statistics of the Study Variables

Variable	N	Minimum	Maximum	Mean	SD
Voluntary Sunnah Fasting	60	11	20	15.55	2.43
Patience	60	15	26	22.50	2.17
Delayed Gratification	60	16	31	25.72	3.21

Correlation Analysis

Pearson's correlation analysis was conducted to examine the bivariate associations between voluntary sunnah fasting and the two outcome variables. The results are presented in Table 2.

Voluntary sunnah fasting demonstrated a moderate positive correlation with patience ($r = .529$, $p < .001$), indicating that participants reporting greater engagement in voluntary sunnah fasting also tended to report higher levels of patience. Similarly, voluntary sunnah fasting showed a moderate positive correlation with delayed gratification ($r = .535$, $p < .001$), suggesting that higher levels of fasting practice were associated with greater ability to postpone immediate rewards in favor of future goals.

These findings indicate that both outcome variables were positively associated with voluntary sunnah fasting and these statistically significant positive associations provided initial empirical support for examining the proposed relationships using regression analysis.

Table 2. Pearson Correlation Analysis

Variables	<i>r</i>	<i>p</i>
Voluntary Sunnah Fasting – Patience	.529	< .001
Voluntary Sunnah Fasting – Delayed Gratification	.535	< .001

Regression Analysis of the Associations Between Voluntary Sunnah Fasting and Students' Self-Regulation

Simple linear regression analyses were conducted to examine whether voluntary sunnah fasting was significantly associated with patience and delayed gratification. The results of both regression models are presented in Table 3.

For the first model, voluntary sunnah fasting was significantly associated with patience ($B = 0.472$, $\beta = .529$, $t = 4.75$, $p < .001$). The overall model was statistically significant, $F(1, 58) = 22.56$, $p < .001$, explaining 28.0% of the variance in patience ($R^2 = .280$).

Similarly, voluntary sunnah fasting was significantly associated with delayed gratification ($B = 0.706$, $\beta = .535$, $t = 4.82$, $p < .001$). The regression model was also statistically significant, $F(1, 58) = 23.24$, $p < .001$, accounting for 28.6% of the variance in delayed gratification ($R^2 = .286$).

Across both models, voluntary sunnah fasting demonstrated statistically significant positive associations with the two psychological outcomes. The standardized regression coefficients were comparable in magnitude, indicating a relatively similar predictive contribution of voluntary sunnah fasting to both patience and delayed gratification.

Table 3. Simple Linear Regression Analyses Examining the Associations Between Voluntary Sunnah Fasting and the Outcome Variables

Independent Variable	Patience (Y_1)				Delayed Gratification (Y_2)			
	<i>B</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	β	<i>t</i>	<i>p</i>
Constant	15.16	—	7.84	< .001	14.74	—	6.91	< .001
Voluntary Sunnah Fasting	0.472	.529	4.75	< .001	0.706	.535	4.82	< .001

Model Statistics	Patience	Delayed Gratification
<i>R</i>	.529	.535
R^2	.280	.286
<i>F</i>	22.56	23.24
<i>p</i>	< .001	< .001

Summary of Findings

The statistical analyses consistently supported the proposed hypotheses. Descriptive

statistics indicated adequate variability across the study variables, while Pearson's correlation analyses revealed moderate positive associations between voluntary sunnah fasting and both patience and delayed gratification. Furthermore, the regression analyses demonstrated that voluntary sunnah fasting significantly predicted both psychological outcomes, accounting for approximately 28% of the variance in patience and delayed gratification.

Overall, the findings indicate that students who reported more frequent engagement in voluntary sunnah fasting also reported higher levels of patience and delayed gratification. These statistically significant associations support the proposed theoretical framework while providing an empirical foundation for discussing the potential educational relevance of voluntary sunnah fasting within Islamic boarding school settings.

DISCUSSION | مناقشة

The present study examined whether voluntary sunnah fasting was associated with adolescents' patience and delayed gratification within the context of an Islamic boarding school. The findings demonstrated that students who reported greater engagement in voluntary sunnah fasting also tended to report higher levels of patience and delayed gratification. Although the regression models explained a moderate proportion of variance in both outcomes, the observed associations consistently support the proposition that voluntary fasting may function as a recurring behavioral practice related to adolescents' regulatory functioning rather than merely as a religious ritual. Importantly, these findings should not be interpreted as evidence that voluntary sunnah fasting directly causes improvements in psychological functioning. Instead, they suggest that repeated engagement in voluntary fasting may constitute one of several behavioral experiences associated with the development of regulatory capacities during adolescence. This interpretation is consistent with the multidimensional nature of self-regulation, which is understood to emerge through continuous interactions among individual characteristics, repeated behavioral experiences, and sociocultural contexts rather than through a single determinant (Liu et al., 2020; Messer et al., 2025; Musonif et al., 2026; Willems et al., 2024). Consequently, the present findings extend previous psychological research by demonstrating that voluntary religious practices can be examined empirically as behavioral processes associated with adolescents' self-regulatory development. From an educational perspective, these findings also suggest that recurring religious practices implemented within school settings may represent meaningful learning experiences that support students' self-regulation and character development.

From the perspective of contemporary self-regulation theory, the observed associations can be understood through the repeated exercise of goal-directed behavioral regulation. According to Bandura (1991) Social Cognitive Theory, self-regulation involves an ongoing process of self-monitoring, self-evaluation, and self-reactive adjustment that enables individuals to align their behavior with personally valued goals despite competing impulses. Zimmerman (2000) further argued that effective self-regulation develops through continuous cycles of forethought, behavioral monitoring, and reflective adaptation rather than through isolated acts of self-control. Within this framework, voluntary sunnah fasting may be conceptualized as a naturally occurring context in which adolescents repeatedly practice regulating biological impulses in accordance with internally endorsed goals. This interpretation also aligns with Gillebaart (2020) operational definition of self-control, which emphasizes that successful self-control is not merely the suppression of temptation but the capacity to consistently maintain goal-congruent behavior. Likewise, Galla & Duckworth (2021) argued that individuals with stronger self-control rely less on constant effortful inhibition and more on repeated adaptive habits that reduce self-regulatory

conflict over time. Rather than representing a single act of restraint, voluntary sunnah fasting requires sustained behavioral consistency across repeated occasions, making it theoretically compatible with the development of adaptive self-regulatory routines. Furthermore, Masaki (2023) emphasized that self-regulation should be understood as a sociocultural developmental process shaped by repeated interactions between individuals and their cultural environments. From this perspective, voluntary sunnah fasting represents not only an individual behavioral practice but also a culturally embedded experience through which adolescents may repeatedly exercise self-regulatory skills within a meaningful social and religious context. Within educational environments, repeated behavioral practices provide students with opportunities to internalize self-regulatory skills through everyday learning experiences rather than through explicit instruction alone.

The positive association between voluntary sunnah fasting and patience provides further insight into the emotional dimension of adolescent self-regulation. In the present study, patience is not interpreted as a purely moral or religious virtue but as a psychological capacity to maintain emotional stability, tolerate frustration, and sustain goal-directed behavior under conditions of difficulty. This interpretation is consistent with Schnitker (2012) conceptualization of patience as an adaptive form of emotion regulation that enables individuals to persist despite delayed outcomes, uncertainty, or emotional discomfort. Accordingly, the association observed in this study suggests that repeated engagement in voluntary fasting may be related to adolescents' ability to regulate emotional responses when immediate biological or psychological desires cannot be satisfied. Importantly, this interpretation should not be understood as implying that fasting alone produces greater patience. Rather, voluntary fasting may represent one of several repeated self-regulatory experiences through which adolescents practice emotional restraint and behavioral persistence. This interpretation is further supported by recent evidence indicating that religiosity during adolescence is associated with more favorable psychological adjustment primarily through effortful control and self-regulatory processes rather than through religious belief itself (Schnitker et al., 2021). Moreover, contemporary developmental research emphasizes that individual differences in adolescent self-regulation emerge from the interaction between personal characteristics and environmental experiences accumulated over time (Hardy & Taylor, 2024; Hodge et al., 2020; Mead & Baumeister, 2021). Therefore, the present findings are theoretically consistent with the proposition that repeated behavioral regulation embedded within education social practices may contribute to the development of emotional regulatory capacities represented by patience. Accordingly, patience may be understood not only as an individual psychological attribute but also as a developmental outcome that can be supported through educational experiences emphasizing emotional regulation and behavioral persistence.

The present findings also demonstrated that voluntary sunnah fasting was positively associated with delayed gratification, supporting the theoretical proposition that repeated behavioral restraint may contribute to adolescents' capacity to prioritize long-term goals over immediate rewards. Unlike patience, which primarily reflects emotional regulation under adversity, delayed gratification concerns the regulation of reward-oriented decision-making when individuals voluntarily postpone immediate satisfaction in pursuit of future benefits (Bembenutty & Karabenick, 1998; Nakaya et al., 2026). From this perspective, voluntary fasting shares important structural characteristics with delayed gratification because both require individuals to inhibit immediate impulses while maintaining commitment to personally valued long-term objectives. These findings are consistent with contemporary research demonstrating that self-control facilitates academic persistence and adaptive goal pursuit by enabling individuals to resist short-term temptations in favor of enduring goals. Within educational settings, delayed

gratification has long been recognized as an important predictor of sustained learning, academic persistence, and students' ability to prioritize long-term educational goals over immediate distractions (Duckworth et al., 2020). Nevertheless, the moderate explanatory power observed in the present study suggests that delayed gratification should not be attributed solely to fasting behavior. Instead, adolescents' capacity to postpone immediate rewards is likely to develop through multiple interacting influences, including habitual self-regulation, educational experiences, family environments, and broader developmental processes. Consequently, voluntary sunnah fasting may be understood as one recurring behavioral context in which reward regulation is repeatedly practiced rather than as an exclusive determinant of delayed gratification.

The present findings also contribute to the growing psychological literature on fasting by extending discussions beyond physiological and clinical outcomes toward mechanisms of behavioral self-regulation. Existing evidence has consistently demonstrated that fasting influences multiple biological systems, including metabolic regulation, neuroendocrine functioning, and psychological well-being (Maulvi et al., 2026; Najam et al., 2019; Wang & Wu, 2022). Likewise, a systematic review and meta-analysis by Berthelot et al. (2021) concluded that structured fasting interventions were associated with reductions in anxiety and depressive symptoms without increasing fatigue, suggesting that fasting may support adaptive psychological functioning in addition to physical health. However, previous studies have primarily focused on fasting as a health-related intervention or examined short-term psychological consequences of fasting periods. Experimental evidence reported by Rad et al. (2023), for example, showed that Ramadan fasting may temporarily reduce cognitive control when food-related cues become highly salient, highlighting the substantial self-regulatory demands imposed during active fasting. Rather than contradicting the present findings, these results reinforce the view that fasting constitutes a psychologically demanding context requiring continuous regulation of competing biological and goal-directed motivations. Furthermore, Marcus & McCullough (2021) argued that the relationship between religion and self-control is more convincingly explained by sustained participation in religious practices than by religious cognition alone. Viewed together, these studies provide converging evidence that repeated religious behaviors, including voluntary fasting, may function as meaningful opportunities for exercising self-regulatory capacities over time. Collectively, these findings indicate that fasting should not be viewed exclusively as a health-related behavior but also as a repeated educational experience through which students may practice self-regulatory skills.

Beyond confirming previous empirical observations, the present study offers several theoretical contributions to contemporary self-regulation research. First, it extends Social Cognitive Theory by conceptualizing voluntary sunnah fasting as a naturally occurring form of repeated behavioral self-regulation rather than solely as a religious obligation or physiological intervention. While previous fasting research has predominantly emphasized metabolic or short-term psychological outcomes, the present findings suggest that voluntary fasting may also be understood as a recurring behavioral practice through which inhibitory control, behavioral persistence, and goal-directed regulation are continuously exercised. Second, this study differentiates patience and delayed gratification as two conceptually distinct manifestations of self-regulation instead of treating them as interchangeable indicators of self-control. This distinction contributes to a more nuanced understanding of adolescent regulatory functioning by recognizing that emotional regulation under adversity and reward regulation involve related but partially independent psychological processes. Finally, by integrating contemporary perspectives on self-regulation (Galla & Duckworth, 2021; Gillebaart, 2020; Masaki, 2023) with the psychology

of religious behavior, the present study demonstrates that culturally embedded religious practices can be investigated using established psychological frameworks without reducing them to purely theological or normative phenomena. The present study also contributes to educational psychology by positioning voluntary sunnah fasting as a behavioral educational practice that may support students' self-regulation and character development within Islamic boarding school education.

Beyond its theoretical implications, the present study also contributes to understanding how self-regulatory processes develop within culturally embedded educational environments. Contemporary perspectives increasingly emphasize that self-regulation is not solely an individual cognitive capacity but also a developmental process shaped by social practices, institutional norms, and cultural experiences (Masaki, 2023). Similarly, Messer et al. (2025) argue that repeated interactions within culturally structured environments play a critical role in the acquisition and maintenance of self-regulatory competencies throughout development. From this perspective, the Islamic boarding school (pesantren) represents more than a religious educational institution; it constitutes a sociocultural context in which daily routines, communal discipline, and voluntary religious practices provide recurring opportunities for adolescents to exercise goal-directed behavior. Accordingly, the observed associations between voluntary sunnah fasting, patience, and delayed gratification should be interpreted within this broader developmental ecology rather than as isolated effects of fasting alone. Therefore, voluntary sunnah fasting may be viewed as one educational practice embedded within a comprehensive system of character education rather than as an isolated religious activity. By examining voluntary sunnah fasting within the pesantren context, this study broadens the cultural scope of contemporary self-regulation research, which has been predominantly informed by Western educational settings, and demonstrates that culturally embedded religious practices can be investigated using established psychological theories while remaining sensitive to their unique social contexts.

Several limitations should be considered when interpreting the present findings. First, the cross-sectional design does not permit causal conclusions; therefore, the observed relationships should be interpreted as associations rather than evidence that voluntary sunnah fasting directly enhances patience or delayed gratification. Second, the study relied exclusively on self-report measures, which may introduce common method variance and socially desirable responding despite assurances of anonymity. Third, the relatively small sample drawn from a single Islamic boarding school limits the generalizability of the findings to other educational settings and adolescent populations. In addition, because the participants were recruited from a relatively homogeneous educational context, the demographic variability of the sample was limited. Future studies are encouraged to include more comprehensive demographic characteristics, such as age, grade level, and gender composition, to facilitate broader comparisons across educational settings and improve the generalizability of the findings. Finally, the regression models explained approximately 28% of the variance in the outcome variables, indicating that students' self-regulation is influenced by additional factors such as family support, educational experiences, peer interactions, and individual characteristics. Future studies should employ longitudinal or experimental designs, include larger and more diverse educational samples, and investigate potential mediating or moderating variables that explain how repeated educational practices contribute to self-regulatory development.

The present findings have important implications for educational psychology and character education. Rather than relying solely on explicit instruction, educational institutions may strengthen students' self-regulation by integrating repeated behavioral practices into everyday

educational routines. Such practices provide students with continuous opportunities to develop impulse regulation, persistence, emotional control, and commitment to long-term goals through authentic learning experiences.

Character education programs may therefore benefit from combining reflective learning activities with structured opportunities for students to practice impulse regulation, persistence, and long-term goal commitment. Within Islamic boarding schools, voluntary sunnah fasting may represent one component of a broader educational strategy that integrates religious practice with character education, emotional development, and self-regulatory learning. More broadly, the findings suggest that culturally meaningful educational practices can complement evidence-based approaches to character education by supporting students' holistic development without relying solely on normative or theological assumptions.

In conclusion, the present study demonstrates that greater engagement in voluntary sunnah fasting is associated with higher levels of patience and delayed gratification among adolescents in an Islamic boarding school. By conceptualizing voluntary sunnah fasting as a repeated behavioral self-regulation practice, the study extends contemporary perspectives on self-regulation beyond physiological and religious interpretations and highlights its relevance within educational contexts. The findings suggest that repeated participation in culturally meaningful educational practices may provide valuable opportunities for adolescents to strengthen emotional regulation, behavioral persistence, and long-term goal orientation. Taken together, these findings highlight the importance of integrating culturally meaningful behavioral practices into educational research to better understand how schools can support students' self-regulation, character development, and long-term learning outcomes. This perspective offers a foundation for future research examining how educational environments can cultivate self-regulatory competencies through developmentally appropriate and culturally responsive practices.

CONCLUSSION

خاتمة

This study examined the associations between voluntary sunnah fasting and two complementary dimensions of students' self-regulation, namely patience and delayed gratification, among adolescents enrolled in an Islamic boarding school. The findings indicate that greater engagement in voluntary sunnah fasting was positively associated with higher levels of both outcomes, suggesting that repeated voluntary fasting may serve as a meaningful educational practice through which students repeatedly exercise self-regulatory capacities. Rather than viewing fasting solely as a religious ritual or a physiological practice, this study positions voluntary sunnah fasting as a naturally occurring behavioral experience that supports sustained impulse regulation, goal-directed behavior, and commitment to long-term goals within an educational setting.

The study contributes to educational psychology by distinguishing patience and delayed gratification as theoretically related yet conceptually distinct dimensions of self-regulation and by demonstrating their relevance within the context of Islamic boarding school education. Furthermore, the findings extend contemporary self-regulation research by highlighting that culturally embedded educational practices may provide authentic opportunities for students to develop emotional regulation, behavioral persistence, and long-term orientation as part of character education.

From a practical perspective, the findings suggest that schools may strengthen students' self-regulation not only through explicit instruction but also through repeated educational experiences that encourage discipline, reflection, persistence, and responsible decision-making.

Within Islamic boarding schools, voluntary sunnah fasting may therefore be understood as one component of a broader character education program designed to foster students' personal, moral, and academic development.

Future research should employ longitudinal, experimental, or multi-site designs to examine the causal mechanisms linking repeated educational practices with students' self-regulation and to determine whether these associations are consistent across different educational and cultural contexts. Overall, the present study highlights the importance of integrating culturally meaningful educational practices into educational psychology research to better understand how schools can support students' self-regulation, character development, and long-term learning outcomes.

BIBLIOGRAPHY

مراجع

- Al Jardali, H., Bizri, R. M., & Kebbi, A. (2026). Multifaith Fasting and Delayed Gratification: Implications for Organizational Functioning. *Journal of Management, Spirituality & Religion*.
- Albosta, M., & Bakke, J. (2021). Intermittent fasting: Is there a role in the treatment of diabetes? A review of the literature and guide for primary care physicians. *Clinical Diabetes and Endocrinology*, 7(1), 3. <https://doi.org/10.1186/s40842-020-00116-1>
- Azis, D. K., Musonif, I., Salsabila, S., Fatah, M. A., & Aji, M. (2026). Integrating Artificial Intelligence And Humanistic Values In Islamic Elementary Education : A Case Study At Madrasah Ibtidaiyah NU Ma'Arif Karangnangka. *Edukasi Islami: Jurnal Pendidikan Islam*, 15(02), 635–654. <https://doi.org/10.30868/ei.v15i02.10039>
- Baeti, A. N., Sangidah, S., Musonif, I., & Mawardi, K. (2026). Islamic Historiography from Normative Tradition to Critical and Interdisciplinary Approach. *Al-Afkar, Journal For Islamic Studies*, 9(2 SE-Articles), 2311–2320. <https://doi.org/10.31943/afkarjournal.v9i2.3477>
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50(2), 248–287. [https://doi.org/10.1016/0749-5978\(91\)90022-L](https://doi.org/10.1016/0749-5978(91)90022-L)
- Bembenutty, H., & Karabenick, S. A. (1998). Academic delay of gratification. *Learning and Individual Differences*, 10(4), 329–346. [https://doi.org/10.1016/S1041-6080\(99\)80126-5](https://doi.org/10.1016/S1041-6080(99)80126-5)
- Berthelot, E., Etchecopar-Etchart, D., Thellier, D., Lancon, C., Boyer, L., & Fond, G. (2021). Fasting Interventions for Stress, Anxiety and Depressive Symptoms: A Systematic Review and Meta-Analysis. In *Nutrients* (Vol. 13, Number 11, p. 3947). <https://doi.org/10.3390/nu13113947>
- Creswell, J. W., & Creswell, J. D. (2018). Research Design Qualitative, Quantitative, and Mixed Methods Approaches. In *Writing Center Talk over Time: A Mixed-Method Study*. <https://doi.org/10.4324/9780429469237>
- Duckworth, A. L., Taxer, J. L., Eskreis-Winkler, L., Galla, B. M., & Gross, J. J. (2020). Self-control and academic achievement. *Annual Review of Psychology*, 71, 373–399. <https://doi.org/10.1146/annurev-psych-010419-050719>
- Fahrezi, F., Athoillah, M. I., A'yun, S. Q., Hasanah, U., & Musonif, I. (2026). Psychosocial Adaptation of Santri From Dysfunctional Families In Islamic Boarding Schools: A Humanistic Educational Approach. *Jurnal Ilmiah IJGIE*, 6(2), 399–417. <https://doi.org/10.37567/ijgie.v7i1.5157>
- Fahrezi, F., Musonif, I., Labibah, H. S., Athoillah, M. I., & Munip, A. (2026). A Psycho-Sociolinguistic-Based Project-Based Learning Model for Arabic Language Learning: A Case

- Study at Mts Al-Ma'arif Rakit. *Abjadia : International Journal of Education*, 11(1), 143–154. <https://doi.org/10.18860/abj.v11i1.39835>
- Galla, B. M., & Duckworth, A. L. (2021). More than resisting temptation: Beneficial habits mediate the relationship between self-control and positive life outcomes. *Journal of Personality and Social Psychology*. <https://doi.org/10.1037/pspp0000386>
- Gillebaart, M. (2020). The operational definition of self-control. *Frontiers in Psychology*, 11, 1231. <https://doi.org/10.3389/fpsyg.2020.01231>
- Goncalves, J. P. de B., Lucchetti, G., Maraldi, E. de O., Fernandez, P. E. L., Menezes, P. R., & Vallada, H. (2023). The role of religiosity and spirituality in interpersonal violence: a systematic review and meta-analysis. *Brazilian Journal of Psychiatry*, 45, 162–181.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
- Hardy, Sam A, & Taylor, Emily M. (2024). Religious deconversion in adolescence and young adulthood: A literature review. *Archive for the Psychology of Religion*, 46(2), 180–203. <https://doi.org/10.1177/00846724241235176>
- Hasanah, N. A., Fatah, M. A., Musonif, I., & Novikasari, I. (2026). The Influence of Fear of Missing Out and Self-Control on Zuhud Values among Adolescents in Islamic Education. *Edusoshum : Journal of Islamic Education and Social Humanities*, 6(2 SE-Articles), 1333–1334. <https://doi.org/10.52366/edusoshum.v6i2.422>
- Hauser, M. D. (2019). Patience! How to Assess and Strengthen Self-Control. *Frontiers in Education*, Volume 4-. <https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2019.00025>
- Hodge, A. S., Alderson, C. J., Mosher, D. K., Davis, C. W., Hook, J. N., Van Tongeren, D. R., Green, J. D., & Davis, D. E. (2020). *Chapter 8 - Religion and spirituality, free will, and effective self-regulation* (K. E. Vail & C. B. T.-T. S. of R. Routledge Spirituality, and Existentialism, Eds.; pp. 103–117). Academic Press. <https://doi.org/10.1016/B978-0-12-817204-9.00009-3>
- Kurniawan, R. A., Tika, E. P., Novikasari, I., Hamimah, U., Setyaningrum, R. A., & Musonif, I. (2026). Training Engagement Intensity and Prosocial Character Among Young Taekwondo Participants. *Edusoshum : Journal of Islamic Education and Social Humanities*, 6(3 SE-Articles), 1530–1544. <https://doi.org/10.52366/edusoshum.v6i3.438>
- Liu, S., Yu, Q., Li, Z., Cunha, P. M., Zhang, Y., Kong, Z., Lin, W., Chen, S., & Cai, Y. (2020). Effects of Acute and Chronic Exercises on Executive Function in Children and Adolescents: A Systemic Review and Meta-Analysis. *Frontiers in Psychology*, Volume 11. <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2020.554915>
- Maharani, A. P., & Musonif, I. (2026). Model Pembelajaran Berbasis Media Interaktif untuk Meningkatkan Keterampilan Kritis Siswa di Sekolah. *An-Nahdlah: Jurnal Pendidikan Islam*, 5(3 SE-Articles), 1065–1073. <https://doi.org/10.51806/an-nahdlah.v5i3.872>
- Marcus, Z. J., & McCullough, M. E. (2021). Does religion make people more self-controlled? A review of research from the lab and life. *Current Opinion in Psychology*, 40, 167–170. <https://doi.org/10.1016/j.copsyc.2020.12.001>
- Masaki, F. (2023). Self-regulation from the sociocultural perspective—A literature review. *Cogent Education*, 10(2), 2243763. <https://doi.org/10.1080/2331186X.2023.2243763>

- Maulvi, F. A., Desai, D. T., Vyas, B. A., Shah, D. O., & Willcox, M. D. P. (2026). Fasting as a Multisystem Health Modulator: A Narrative Review of Metabolic, Cardiovascular, Immune, Neurocognitive, and Psychospiritual Effects. *Current Nutrition Reports*, 15(1), 4.
- Mead, N. L., & Baumeister, R. F. (2021). Do objects fuel thyself? The relationship between objects and self-regulation. *Current Opinion in Psychology*, 39, 16–19.
<https://doi.org/https://doi.org/10.1016/j.copsyc.2020.07.008>
- Messer, E. J. E., Roome, H. E., & Legare, C. H. (2025). Learning to control through culture: Explaining variation in the development of self-regulation. *Psychological Review*, 132(4), 956.
- Musonif, I., Aisyah Puan Maharani, Mahin Anas Ramadona, Saifudin, S., & Rohman Hakim. (2026). Integrative inclusive problem based fiqh learning for contextual understanding and epistemic engagement. *ATTARBIYAH: Journal of Islamic Culture and Education*, 11(1 SE-Articles), 63–81. <https://doi.org/10.18326/attarbiyah.v11i1.63-81>
- Musonif, I., Athoillah, M. I., Khuzaemah, B., Salsabila, S., & Mawardi, K. (2026). Beyond Binary Opposition: Reconfiguring Islamic Responses to Western Modernity through Resistance, Adaptation, and Post-Secular Synthesis. *IHSAN: Jurnal Pendidikan Islam*, 4(2), 165–179.
<https://doi.org/10.61104/ihsan.v4i2.5524>
- Musonif, I., & Azis, D. K. (2026). Teori-Teori Pendidikan Integratif Educating the Whole Person. In *Qriset indonesia*. Qriset Indonesia. <https://qrisetindonesia.com/buku/teori-teori-pendidikan-integratif-educating-the-whole-person/>
- Musonif, I., Baeti, A. N., Athoillah, M. I., Azis, D. K., & Fahrezi, F. (2026). Religious Habitus Formation Through Madrasah-Pesantren Collaboration: A Sociological Analysis. *Jurnal Ilmiah IJGIE International Journal Of Graduate Of Islamic Education*, 7(1), 399–417.
<https://doi.org/10.37567/ijgie.v7i1.4892>
- Musonif, I., & Misbah, M. (2026). A Conceptual Model of Integrating Deliberative Transformative and Authentic Learning in Multicultural Religious Education. *Kasyafa: Jurnal Pendidikan Agama Islam*, 3(2 SE-Articles), 181–193.
<https://doi.org/10.61166/kasyafa.v3i2.164>
- Musonif, I., Romadona, M. A., Fatah, M. A., Zaman, M. F., Azis, K., & Nasrin, S. (2026). Integrating Multiple Intelligences in Problem-Solving Approaches to Enhance Fiqh Learning for Middle School Students. *Al-Tadzkiyyah: Jurnal Pendidikan Islam*, 17(1), 1–15.
<https://doi.org/10.24042/atjpi.v17i1.30145>
- Musonif, I., Salsabila, S., Syifa, R. N., & Azis, D. K. (2026). Reconstructing the Meaning of Fiqh Learning through Accelerated and Quantum Learning in the Digital Generation. *Al-Afkar, Journal for Islamic Studies*, 9(2 SE-Articles), 2191–2205.
<https://doi.org/10.31943/afkarjournal.v9i2.3455>
- Najam, K. S., Khan, R. S., Waheed, A., & Hassan, R. (2019). Impact of Islamic practices on the mental health of Muslims. *International Dental & Medical Journal of Advanced Research*, 5(1), 1–6.
- Nakaya, M., Ito, T., & Akamatsu, D. (2026). Academic Delay of Gratification: Research Trends in Japan and Asia. *New Directions for Teaching and Learning*, 2026(185), 59–63.
<https://doi.org/https://doi.org/10.1002/tl.70009>
- Nur Azizah, F. (2026). An Islamic Educational Approach to Students' Mental Health Challenges Amidst Academic Pressure and the Influence of Social Media. *Proceeding International Conference on Islam, Law, and Society (INCOILS)*, 5(1 SE-EDUCATION).
<https://doi.org/10.70062/incoils.v5i1.443>

- Nuryamin, N., Ahmad, L. O. I., Mosiba, R., Amri, M., & Bin Tahir, S. Z. (2026). The role of Islamic religious education in advancing equality in student participation in physical education: a scoping review. *Frontiers in Education, Volume 11*.
<https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2026.1779417>
- Panakaje, N., Ameer, S., Parvin, S. M. R., Nashifa, F., & Sheikh, N. (2026). Fasting and neurocognitive adaptability: investigating the role of Ramadan in decision-making, creativity and problem-solving among Muslim students. *Journal of Islamic Accounting and Business Research*, 1–26. <https://doi.org/10.1108/JIABR-08-2025-0497>
- Patterson, R. E., & Sears, D. D. (2017). Metabolic effects of intermittent fasting. *Annual Review of Nutrition*, 37, 371–393. <https://doi.org/10.1146/annurev-nutr-071816-064634>
- Rad, Mostafa Salari, Ansarinia, Morteza, & Shafir, Eldar. (2023). Temporary Self-Deprivation Can Impair Cognitive Control: Evidence from the Ramadan Fast. *Personality and Social Psychology Bulletin*, 49(3), 415–428. <https://doi.org/10.1177/01461672211070385>
- Ramadona, M. A., Musonif, I., & Priyatno, S. (2026). Muslim Students In Catholic Religious Education In Indonesia: Interfaith Learning And Socio-Religious Identity Negotiation. *Jurnal Ilmiah IJGIE*, 6(2), 399–417. <https://doi.org/10.37567/ijgie.v7i1.5141>
- Saifudin, Aji, M., Musonif, I., Darmawan, Z. G., & Maharani, A. P. (2026). Between Adab And Digital Learning: A Qualitative Case Study In Indonesian Pesantren-Based Madrasah. *Jurnal Ilmiah IJGIE*, 6(2), 399–417. <https://doi.org/10.37567/ijgie.v7i1.5146>
- Schnitker, S. A. (2012). An examination of patience and well-being. *The Journal of Positive Psychology*, 7(4), 263–280. <https://doi.org/10.1080/17439760.2012.697185>
- Schnitker, S. A., Medenwaldt, J. M., & Williams, E. G. (2021). Religiosity in adolescence. *Current Opinion in Psychology*, 40, 155–159.
<https://doi.org/https://doi.org/10.1016/j.copsyc.2020.09.012>
- Steinberg, L. (2014). *Age of Opportunity: Lessons from the New Science of Adolescence*. Houghton Mifflin Harcourt.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72(2), 271–324. <https://doi.org/10.1111/j.0022-3506.2004.00263.x>
- Trepanowski, J. F., & Bloomer, R. J. (2010). The impact of religious fasting on human health. *Nutrition Journal*, 9, 57. <https://doi.org/10.1186/1475-2891-9-57>
- Wang, Y., & Wu, R. (2022). The Effect of Fasting on Human Metabolism and Psychological Health. *Disease Markers*, 2022(1), 5653739.
<https://doi.org/https://doi.org/10.1155/2022/5653739>
- Willems, Y. E., Li, J.-B., Bartels, M., & Finkenauer, C. (2024). Individual differences in adolescent self-control: The role of gene-environment interplay. *Current Opinion in Psychology*, 60, 101897. <https://doi.org/https://doi.org/10.1016/j.copsyc.2024.101897>
- Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In *Handbook of self-regulation* (pp. 13–39). <https://doi.org/10.1016/B978-012109890-2/50031-7>

