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Applying Behaviorist Principles to Obligatory Prayer Habituation among Prospective Madrasah Ibtidaiyah Teachers

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Abstract

This study aims to examine changes in religious behavior through the application of behaviorist theory in the habituation of obligatory prayers among students. The study employed a descriptive qualitative design involving twelve fourth-semester students of the Madrasah Ibtidaiyah Teacher Education (PGMI) program and one supervising lecturer at UIN Fatmawati Sukarno Bengkulu. The study was conducted over a four-week period. Data were collected through participatory observation, semi-structured interviews, behavioral modification diaries, and supporting documentation. Data were analyzed using the interactive model of Miles, Huberman, and Saldaña (2014), which involves data reduction, data display, and conclusion drawing and verification. Behavioral changes were examined descriptively by comparing observed prayer routines, reported prayer frequency, response latency, and patterns of external prompting throughout the observation period. The findings indicate that prayer habituation was supported by three interconnected strategies: identifying stimulus controls and sources of interference, structuring the physical and social environment to facilitate prayer, and applying positive reinforcement to encourage behavioral consistency. Descriptively, mean response latency decreased from 15.5 minutes in Week 1 to 7.2 minutes in Week 4, and the number of participants still using artificial reminders decreased from 10 to 5 of 12; these patterns are reported descriptively and are not interpreted as evidence of causal effects. The study concludes that a structured behaviorist framework can provide educational support for developing religious habituation and character among prospective elementary school teachers.

Keywords: *behaviorist theory; obligatory prayer; religious habituation; PGMI students; positive reinforcement*

1. INTRODUCTION

Religious behavior among university students represents an important dimension of character development because the transition to adulthood involves increasing responsibility for regulating personal beliefs, routines, and social behavior. Maintaining consistent religious

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practices may be influenced by academic demands, social environments, and changing daily routines. Research by Hamka (2025) discusses students' worship commitments in relation to campus lifestyles, academic demands, and social environments. In addition, Juwita and Purnama (2025) examined the relationship between the quality of performing obligatory prayers and students' behavior in daily life. These studies highlight the importance of understanding religious practices not only as expressions of religious knowledge but also as behaviors reflected in everyday life. In this context, religious habituation cannot be understood solely as the acquisition of religious knowledge. It also involves the development of behavioral consistency through repeated practice and the capacity to maintain desired behavior across changing situations. For students in Islamic higher education, this issue is particularly relevant because religious learning is expected to be reflected not only in cognitive understanding but also in observable practices. Recent research has therefore emphasized the importance of approaches that connect religious learning with behavioral formation and everyday practice (Hidayat & Malihah, 2023).

The relationship between religious knowledge and religious practice remains an important issue in Islamic education. Religious knowledge does not necessarily translate into consistent implementation in everyday life, making the development of religious habits an important educational concern. Ainiyah and Rahayu (2023) examined the implementation of fiqh learning and students' prayer discipline, highlighting the role of religious instruction in supporting the habituation of obligatory prayers. This suggests that Islamic education needs to connect the understanding of religious obligations with opportunities for practical application and the development of consistent religious behavior. Students may understand the importance of obligatory prayer while facing challenges in maintaining regular prayer routines amid competing activities, environmental distractions, and changing daily schedules. From a behaviorist perspective, these conditions highlight the importance of contextual stimuli, repeated practice, and behavioral cues in establishing consistent habits. Accordingly, examining prayer habituation through a behaviorist framework can help explain how environmental conditions and reinforcement contribute to the development and maintenance of regular prayer practices among students. This distinction is important because religious behavior is influenced by both individual and contextual factors.

Behaviorism provides a specific theoretical perspective for examining this problem. Unlike broader behavior change approaches that may incorporate cognitive processes,

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intentions, beliefs, and self-efficacy, behaviorism focuses primarily on observable behavior and its relationship with environmental antecedents and consequences. Classical and operant behaviorist traditions explain how behavior can be acquired, maintained, strengthened, or reduced through systematic interactions between stimuli, responses, and consequences (Skinner, 1953; Cooper, Heron, & Heward, 2020). In the context of this study, behaviorism is not used to explain the theological meaning of prayer or to reduce religious commitment to external reinforcement. Rather, its principles are applied as an educational and behavioral framework for understanding how environmental cues, repeated practice, and reinforcement may support the formation of consistent prayer routines.

Several behaviorist concepts are particularly relevant to the present study. Stimulus control refers to the influence of antecedent stimuli on the occurrence of a particular behavior, making environmental cues relevant to the initiation of desired responses (Cooper, Heron, & Heward, 2020). Reinforcement concerns consequences that increase the future probability of a behavior, with positive reinforcement involving the presentation of a consequence following a behavior that strengthens its recurrence (Skinner, 1953). Shaping involves the systematic reinforcement of successive approximations toward a target behavior, whereas fading involves the gradual reduction or modification of prompts so that behavior becomes less dependent on external assistance (Cooper, Heron, & Heward, 2020). The Premack principle further proposes that a high-probability behavior can function as a reinforcer for a lower-probability behavior (Premack, 1959). These concepts provide the theoretical basis for examining how prayer-related routines may be initiated, strengthened, and gradually maintained with reduced dependence on external prompts. Their application to obligatory prayer habituation in higher education constitutes an empirical application of established behaviorist principles rather than a claim that these principles were originally developed for religious practice.

The selection of students in the Madrasah Ibtidaiyah Teacher Education (PGMI) program is based on the relevance of behavioral competence to their future teaching roles. As prospective elementary school teachers, PGMI students are expected to support students' behavioral and character development. Examining their experiences in developing consistent religious routines can therefore provide insight into behavioral self regulation and the application of behaviorist principles in an educational context. Religious discipline among prospective teachers is viewed as an educational and institutional expectation rather than a formal professional obligation. This framing avoids equating personal religious practice with

a formal professional obligation while retaining the educational relevance of the participants.

UIN Fatmawati Sukarno Bengkulu provides the institutional setting for examining the habituation of obligatory prayers among fourth-semester students in the Madrasah Ibtidaiyah Teacher Education (PGMI) program. This setting allows the st udy to explore how students' prayer routines are shaped by individual practices and the physical and social environment in which they study. The analysis focuses on the application of behaviorist principles in prayer habituation within this specific educational context.

Previous studies have examined various aspects of religious education, prayer discipline, and behavioral development. For example, Ainiyah and Rahayu (2023) examined the relationship between fiqh learning and students' prayer discipline at the junior secondary school level. This study highlights the relevance of religious instruction to the development of prayer habits among school students. However, the application of behaviorist principles to self-directed obligatory prayer habituation among university students remains an important area for further investigation. Unlike studies focusing on school students and religious instruction, the present study examines how fourth-semester students in the Madrasah Ibtidaiyah Teacher Education (PGMI) program at UIN Fatmawati Sukarno Bengkulu experience prayer habituation through behavioral strategies, including stimulus control, positive reinforcement, shaping, and fading. By focusing on university students who increasingly manage their own daily routines, this study explores how behavioral strategies, environmental conditions, and individual experiences contribute to the development and maintenance of obligatory prayer habits in a higher education context.

The study adopts a qualitative perspective to understand how behavioral modification is experienced and documented by participants rather than to statistically estimate the effectiveness of a behavioral intervention. Changes in prayer routines are examined through participants' accounts and documented behavioral observations, including patterns of prayer initiation, reported frequency, response latency, use of external prompts, and changes in behavioral consistency. These indicators are interpreted descriptively and triangulated with relevant data sources to develop an understanding of the behavioral modification process. The study consequently contributes not by claiming statistical effectiveness but by explaining how behaviorist principles are experienced and applied in the everyday religious routines of prospective teachers.

Based on this research gap, the study aims to examine how behaviorist principles are

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applied in the habituation of obligatory prayers among fourth-semester PGMI students at UIN Fatmawati Sukarno Bengkulu. Specifically, the study seeks to answer two questions: (1) How are behaviorist principles, particularly stimulus control, reinforcement, shaping, fading, and the Premack principle, applied in students' prayer habituation? and (2) What behavioral changes, facilitating factors, and obstacles are experienced and documented during the habituation process? By addressing these questions, the study seeks to provide a contextually grounded account of religious behavioral habituation through a behaviorist perspective in Islamic teacher education.

2. RESEARCH METHODOLOGY

This study adopted a descriptive qualitative approach to examine changes in students' religious behavior in the context of obligatory prayer habituation informed by behaviorist principles. The participants were twelve fourth-semester students enrolled in the Madrasah Ibtidaiyah Teacher Education (PGMI) program at UIN Fatmawati Sukarno Bengkulu. One lecturer was included as a supporting informant to provide contextual information about students' behavioral development, rather than to serve as an independent expert validator or evaluator of intervention effectiveness.

Participants were selected through purposive sampling based on three criteria: enrollment as fourth-semester PGMI students, participation in the prayer habituation process, and willingness to take part in observations, interviews, and behavioral diary documentation. The study was conducted over four weeks in September 2026. The student participants comprised five female and seven male students, all of whom lived in rented accommodation (*kos*). The researcher participated in and assisted with the habituation activities. This involvement was recognized as a potential source of researcher bias and was therefore considered during data collection and interpretation. To protect participant confidentiality, students were assigned identification codes (P1–P12). In this simulated research scenario, all participants were assumed to have provided informed consent before data collection. They were also assumed to have been informed about the study's purpose and voluntary nature, including their right to withdraw without penalty. This statement is fictional and must be retained only if it accurately reflects the procedures followed in the actual study.

The behavioral habituation process was organized around several behaviorist principles, including stimulus control, reinforcement, shaping, fading, and the Premack principle. The

process began with identifying participants' existing prayer routines and factors that facilitated or interfered with timely prayer. Participants then established environmental cues such as prayer-time reminders, preparation routines, and appropriate prayer locations. Positive reinforcement was used to encourage repetition of the desired behavior, while shaping was applied to support gradual improvement in prayer consistency. As participants became more accustomed to the routine, reliance on external prompts was gradually reduced through fading. Where applicable, the Premack principle was used by arranging a preferred activity following the completion of the targeted prayer behavior. The process was documented throughout the habituation period to examine changes in prayer consistency and participants' experiences.

Data were collected through participatory observation, semi-structured interviews, behavioral modification diaries, and supporting documentation. Each of the twelve participants was interviewed at the beginning and at the end of the habituation process. The interviews explored participants' initial prayer routines, environmental barriers, reinforcement strategies, experiences of behavioral change, and factors facilitating or hindering the habituation process. Participatory observations focused on prayer-related cues, external prompts, behavioral consistency, and response latency between the presentation of a relevant cue and the initiation of prayer-related behavior.

Response latency refers to the time elapsed between the presentation of a stimulus and the initiation of the target response (Cooper, Heron, & Heward, 2020). In the present study, response latency was measured in minutes from the call to prayer (*adhan*) to the initiation of the prayer-related routine. These intervals were documented by the observer through direct observation. The study lasted four weeks (28 days), with five obligatory prayers per day, resulting in 140 potential prayer opportunities for each participant and 1,680 across all twelve participants. Direct observations covered 1,512 of these opportunities, whereas the remaining 168 were recorded in behavioral diaries. These figures represent simulated data for practice purposes only and must be replaced with verified records before the manuscript is used to report an actual study.

The behavioral diaries were used to document daily prayer routines, environmental stimuli, the use of reminders, reinforcement experiences, approximate response latency, and participants' reflections. Prayer frequency, response latency, and related indicators were analyzed descriptively to identify and document behavioral patterns throughout the habituation process. These indicators were used to describe observed patterns rather than to

test statistical significance. The findings from observations, interviews, behavioral diaries, and supporting documentation were considered together to develop a contextual understanding of changes in participants' prayer-related behavior.

Data were analyzed using the interactive model of Miles, Huberman, and Saldaña (2014) through data reduction, data display, and conclusion drawing and verification. Interview transcripts, observation notes, behavioral diaries, and lecturer information were coded and categorized according to recurring behavioral patterns and the behaviorist framework, including stimulus control, reinforcement, shaping, fading, response latency, and behavioral consistency. The categorized data were displayed in thematic matrices to compare patterns across participants and data sources, after which conclusions were verified by returning to the original data and examining consistency across sources. Trustworthiness was strengthened through source and method triangulation, member checking of relevant participant accounts, and maintenance of an audit trail consisting of interview records, observation notes, diary documentation, and coding records.

3. RESULTS AND DISCUSSION

Identifying Stimulus Controls and Environmental Restructuring in Student Prayer Routines

The first stage of the behavioral modification process focused on identifying antecedent stimuli associated with students' prayer routines and arranging the surrounding environment to support the initiation of the target behavior. In behavior analysis, stimulus control concerns the relationship between antecedent stimuli and the occurrence of a particular behavioral response (Halbur, Caldwell, & Kodak, 2021). Analysis of observation notes, semi-structured interviews, and behavioral modification diaries focused on identifying conditions associated with delayed prayer initiation, including smartphone use, academic activities, social interactions, and irregular sleep patterns. These conditions were considered in relation to each participant's daily routine rather than being assumed to affect all participants in the same way.

Smartphone use and academic activities were among the conditions examined as potential competing stimuli. Ongoing academic tasks, digital notifications, and social media engagement could compete with participants' attention to prayer-related cues. Social interactions and fatigue associated with irregular sleep patterns were also considered when

examining participants' reported experiences. From a behavior-analytic perspective, these conditions were interpreted as contextual factors associated with competing behavior rather than as independent causes of delayed prayer initiation (Halbur et al., 2021). This distinction was important because the presence of a distracting stimulus did not necessarily indicate that a participant would delay prayer in every situation.

Environmental restructuring was considered a practical strategy for making prayer-related cues more noticeable and accessible. Participants were encouraged to arrange prayer-related items, such as prayer garments and prayer rugs, in visible and accessible locations. Where appropriate, a designated prayer area could also provide a relatively consistent physical context for initiating the prayer routine. These arrangements were intended to support the transition from daily activities to prayer while reducing avoidable distractions. The specific arrangements were adapted to participants' living conditions and academic schedules rather than imposed uniformly on all twelve participants.

Digital stimulus management was another aspect of the environmental arrangement. Smartphone reminders, notification-management functions, and focus settings were considered potential means of reducing digital interruptions around prayer times. The relevance of these strategies depended on participants' actual practices and the information documented in their behavioral diaries and observation records. Accordingly, the analysis distinguished between strategies that participants reported using and behavioral changes that could be identified in the available records. The use of reminders or notification settings was not treated as sufficient evidence of a causal relationship with prayer behavior.

Response latency was also considered when examining changes in prayer-related routines. In this study, response latency referred to the interval between the call to prayer (adhan) and the initiation of the prayer-related routine. Observation notes and behavioral diaries were examined for indications of whether participants continued academic, social, or digital activities after the call to prayer and whether their responses appeared to change during the four-week habituation period.

Overall, the analysis provides a descriptive account of how antecedent stimuli and environmental arrangements were considered in relation to students' prayer routines. The findings should be interpreted in the context of the available observations, interviews, and behavioral diaries. They do not establish that environmental restructuring independently caused changes in prayer behavior. Instead, the analysis emphasizes the importance of

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examining individual routines, competing stimuli, and the practical conditions under which prayer-related behaviors occur.

Table 1. Descriptive Summary of Prayer Routines in Week 1 and Week 4 (n = 12)

Indicator	Week 1	Week 4
Mean response latency (minutes)	15.5	7.2
Prayers reported as performed on time (mean number per participant)	21	30
Participants still using artificial reminders (n of 12)	10	5

Table 1 presents descriptive indicators of students' prayer routines during Weeks 1 and 4 of the habituation process. Mean response latency after the call to prayer decreased from 15.5 minutes in Week 1 to 7.2 minutes in Week 4. The mean number of prayers performed on time per participant increased from 21 to 30, while the number of participants who continued to use artificial reminders decreased from 10 of 12 to 5 of 12. These figures describe the observed patterns at the two measurement points and are presented descriptively rather than as tests of statistical significance. Accordingly, the differences should not be interpreted as evidence that the habituation strategies caused the observed changes.

For the purposes of this practice manuscript, "on time" is operationally defined as initiating an obligatory prayer within the locally applicable prayer-time window, according to the schedule recorded for the study. The values in Table 1 are simulated totals per participant across the specified observation period. The observation period and denominator for the on-time prayer counts must be verified against the actual records before the figures are used in a report of empirical research.

Individual variations were observed in participants' responses to the call to prayer. In Week 1, response latency ranged from 5 to 30 minutes, whereas in Week 4, it ranged from 2 to 20 minutes. Although most participants showed a reduction in response latency, 3 of the 12 participants did not demonstrate a consistent decrease. In addition, 5 participants continued to rely on artificial reminders, such as smartphone alarms, to initiate their prayer routines in Week 4. These variations suggest that the development of prayer habituation differed among participants. However, further observation would be needed to understand the factors associated with these differences.

Temporal organization also emerged as a supporting condition for behavioral

consistency. Participants arranged their daily activities by considering the relationship between lecture schedules, academic tasks, rest periods, and prayer times. Establishing relatively predictable antecedent conditions can support the development of behavioral routines because repeated responses become associated with recurring contextual cues. In this study, participants' diary records indicated that incorporating prayer into an anticipated daily sequence made the transition from academic or leisure activities to prayer more manageable. Temporal organization was therefore interpreted as an important contextual factor supporting behavioral stability rather than as a statistical predictor of long-term religious behavior. This interpretation is consistent with the broader behavior-analytic view that environmental conditions can be systematically arranged to influence the probability of a target response (Cooper et al., 2020).

The process of fading was observed as participants gradually reduced their dependence on artificial prompts. Fading is a gradual-change procedure in which controlling stimuli or prompts are systematically reduced or modified while the target response is maintained (Kincaid, 2023). During the initial stage, some participants relied on smartphone alarms, reminders, or peer messages to initiate prayer. As the routine became more familiar, some of these external prompts were reduced, while naturally occurring cues, such as the call to prayer, transitions between activities, and established daily routines, became more prominent. In this study, fading was operationalized as a gradual reduction in the use of specifically arranged external prompts while observing whether participants continued to initiate the target behavior. Diary records and observation notes were used to identify whether prayer initiation occurred with or without the previously used artificial reminders. The gradual reduction of prompts was therefore treated as a transition process rather than as an assumption that participants had become completely independent of environmental cues.

The behavioral pattern was also examined across different settings. Participants reported applying the prayer routine not only in their private rooms but also during academic activities on campus and in other locations where the original environmental arrangement was not fully available. In behavior analysis, generalization concerns the extent to which a learned response occurs across stimuli, settings, or conditions that differ from those present during the original learning context (Cooper et al., 2020). When participants were able to initiate or maintain the prayer routine despite changes in physical setting, the pattern was interpreted as preliminary evidence of stimulus generalization. This interpretation remains bounded because the study

did not systematically test generalization across all possible environments. The findings indicate only that, for some participants, prayer initiation appeared to become less dependent on one specific physical location.

The findings also indicate that environmental restructuring was an important component of the habituation process, particularly during the early stages. The combination of salient prayer-related cues, reduced digital distractions, temporal organization, and gradual reduction of artificial prompts created conditions that supported the transition from competing activities toward prayer. The use of gradual changes in stimuli is consistent with behavior analytic procedures in which changes in discriminative stimuli or prompts are introduced systematically to facilitate behavioral transitions (Kincaid, 2023). Because these strategies were applied together, the contribution of each cannot be separated, and the findings do not demonstrate a causal relationship between environmental restructuring and behavioral change. Instead, the data indicate that participants experienced environmental arrangement as a practical means of supporting prayer initiation and consistency within their everyday routines.

Overall, the first phase demonstrates that prayer habituation was preceded by deliberate attention to the antecedent conditions surrounding students' behavior. Participants were encouraged not only to respond to reminders but also to identify competing stimuli, modify their environments, and gradually reduce dependence on external prompts. From a behaviorist perspective, these findings illustrate the relevance of stimulus control, antecedent arrangement, fading, and stimulus generalization in supporting the initiation and maintenance of a desired behavioral routine (Halbur et al., 2021; Kincaid, 2023).

Implementation of Positive Reinforcement and the Mechanism of Behavioral Stability

The second stage of the behavioral modification process focused on the implementation of positive reinforcement to support the repetition of desired prayer behavior. In behavior analysis, positive reinforcement refers to a consequence that is presented following a behavior and increases the future probability of that behavior under relevant conditions (Cooper, Heron, & Heward, 2020). In the present study, reinforcement was not defined simply as any positive experience following prayer. A consequence was considered relevant when it was deliberately arranged following the completion or appropriate initiation of the target behavior and was subsequently recorded as part of the behavioral habituation process. This distinction was important because participants also reported naturally occurring feelings of calmness,

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satisfaction, or relief after prayer, which were treated as participant experiences rather than automatically classified as experimentally established reinforcers.

The reinforcement strategies were adjusted according to participants' preferences and daily circumstances. Social reinforcement included verbal appreciation, peer encouragement, acknowledgment of successful completion, and supportive feedback within the accountability group. In some cases, participants also selected access to preferred leisure activities as a consequence following completion of the targeted prayer routine. The selection of these consequences was discussed with participants rather than imposed uniformly by the researcher. The immediate relationship between the target behavior and the arranged consequence was emphasized because reinforcement is more likely to influence subsequent behavior when the consequence follows the target response in a clear temporal and functional relationship (Cooper et al., 2020). Participants recorded the type of reinforcement used and their response to it in the behavioral modification diary, allowing the researcher to examine whether reinforcement was consistently associated with the targeted prayer behavior.

The implementation of reinforcement also considered the ethical and motivational implications of using tangible or activity-based consequences. Material rewards were kept limited and were not presented as payment for religious worship. Instead, they functioned as temporary behavioral supports within the habituation process. Participants were informed that the purpose of reinforcement was to facilitate behavioral consistency rather than to assign material value to prayer itself. As the routine became more established, reliance on externally arranged rewards was gradually reduced. This reduction was consistent with the broader principle that behavioral supports should be adjusted as the target response becomes more stable rather than maintained indefinitely at the same intensity (Miltenberger, 2016). The participants' experiences therefore suggest a transition from externally arranged consequences toward naturally occurring consequences associated with completing the prayer routine.

Social reinforcement emerged as a particularly visible component of the process. Participants encouraged one another through reminders, acknowledgment, and shared accountability. Peer encouragement did not operate as a uniform intervention for all participants; rather, its role differed according to participants' willingness to engage with the group. Some participants reported that knowing that peers were also attempting to maintain prayer consistency increased their awareness of prayer time and encouraged them to respond more promptly. These findings are more appropriately interpreted as peer support and social

reinforcement than as "social contagion," because the study did not measure the spread of behavior through a network or estimate the influence of one participant on another. Social consequences have long been recognized as potentially important sources of reinforcement in human behavior, particularly when approval, attention, or social interaction follows a desired response (Miltenberger, 2016).

The reinforcement schedule was also adjusted during the habituation process. During the early stage, reinforcement was provided more consistently following successful completion of the target behavior so that participants could recognize the relationship between the behavior and its consequence. As participants became more familiar with the routine, reinforcement was reduced and became less dependent on every individual occurrence of the target behavior. This transition was intended to prevent continuous dependence on external rewards while maintaining behavioral consistency. Because reinforcement schedules were not experimentally compared, the findings indicate only that participants experienced a gradual reduction in externally arranged reinforcement as the habituation process progressed.

Shaping was applied particularly when participants experienced difficulty establishing the complete target routine. Shaping involves reinforcing successive approximations toward a desired behavior rather than requiring the final behavior to occur perfectly from the beginning (Cooper et al., 2020). In the present study, participants who had difficulty maintaining the complete prayer routine were encouraged to progress through smaller behavioral steps. For example, the sequence could begin with responding to the prayer cue, followed by stopping the competing activity, preparing for ablution, performing ablution, and completing the prayer. Progression to the next step was considered when the participant demonstrated greater consistency at the preceding step, based on diary documentation and observation. The shaping process was therefore individualized rather than implemented through an identical number of stages for all twelve participants.

The Premack principle was used in situations where participants identified a preferred activity that could be arranged after the completion of the target prayer behavior. The principle proposes that a high-probability behavior can function as a reinforcer for a lower-probability behavior when access to the preferred activity is made contingent on completion of the target behavior (Premack, 1959). In this study, examples included postponing access to social media, entertainment, or another preferred leisure activity until the participant had completed the targeted prayer routine. The procedure was distinguished from a general self-imposed rule

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because the preferred activity was deliberately arranged as a contingent consequence of the target behavior and was recorded as part of the behavioral strategy. Participants were not required to eliminate the preferred activity; rather, its timing was rearranged so that completion of prayer preceded access to it. The application of the Premack principle was therefore treated as a behavioral arrangement rather than as evidence that preferred activities intrinsically motivate religious behavior.

The study also identified situations in which participants experienced reduced guilt, tension, or internal discomfort after completing prayer. These experiences were not classified as negative reinforcement merely because an unpleasant feeling appeared to decrease. Negative reinforcement requires the removal or reduction of an aversive stimulus contingent on a behavior, resulting in an increase in the future probability of that behavior (Cooper et al., 2020). Because the present study did not experimentally establish that prayer behavior systematically produced the removal of an objectively defined aversive stimulus, participants' reports of emotional relief were treated as subjective experiences accompanying prayer rather than as evidence of a negative reinforcement procedure. This distinction prevents the psychological experience of relief from being incorrectly equated with the technical behavior analytic concept of negative reinforcement.

Behavioral diaries indicated that reinforcement was most useful when participants perceived the consequence as relevant and when it followed the target behavior without substantial delay. Participants differed in the types of consequences they considered meaningful. Some responded more positively to verbal appreciation and peer acknowledgment, whereas others preferred access to leisure activities. This variation supports the need to distinguish between a consequence that is merely pleasant and a consequence that actually functions as reinforcement for a particular individual. Because the study did not conduct a functional analysis of each consequence, the results do not establish that every selected consequence functioned as a reinforcer in the technical experimental sense. The findings instead document participants' responses to the behavioral strategies and the observed patterns of prayer consistency associated with their implementation.

One participant's behavioral diary illustrated the perceived role of peer encouragement in maintaining prayer consistency: "When my friends reminded me before the prayer time ended, I was more likely to stop what I was doing and go to pray" (P7, behavioral diary, Week 2; simulated quotation for practice only). This account suggests that peer reminders may help

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participants remain aware of prayer times and transition from ongoing activities to prayer. However, because the quotation is simulated, it serves only as an illustrative example and cannot be presented as empirical evidence from an actual research participant.

Another simulated interview excerpt illustrates the use of a preferred activity as a potential reinforcement strategy following prayer completion: "I started telling myself that I could check social media or relax after I had finished my prayer" (P3, interview, Week 2; simulated quotation for practice only). This example illustrates how linking a preferred activity to the completion of the target behavior may be incorporated into a habituation strategy. Because this quotation is also simulated, it should be treated as an illustrative example rather than a report of an actual participant's experience.

The reinforcement process was also affected by changes in participants' daily circumstances. During periods of intensive academic activity, participants reported greater difficulty maintaining the established routine and sometimes required renewed reminders or social encouragement. Conversely, when daily schedules were more predictable, participants reported fewer difficulties in responding to prayer cues. These variations suggest that reinforcement did not operate independently of antecedent conditions. Rather, the behavioral pattern emerged through an interaction between environmental cues, participants' responses, and consequences following those responses. This interpretation is consistent with the behavior-analytic view that behavior is best understood through functional relations among antecedents, behavior, and consequences rather than through isolated intervention components (Cooper et al., 2020).

As the habituation period progressed, the role of externally arranged reinforcement appeared to decrease for some participants. Participants increasingly described prayer as part of their ordinary daily routine rather than as a behavior that required continuous external acknowledgment. Observation and diary records also indicated that some participants continued to initiate prayer after reminders or tangible rewards had been reduced. This pattern may indicate increasing behavioral stability, but it should not be interpreted as definitive evidence of complete independence from reinforcement. In behavior analysis, behavior can remain sensitive to naturally occurring consequences even after programmed reinforcement has been reduced (Miltenberger, 2016). The findings therefore support a cautious interpretation: the behavioral routine appeared to become less dependent on the initially arranged reinforcement procedures.

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Overall, the second stage indicates that positive reinforcement provided structured behavioral support during the development of prayer consistency. The process involved social acknowledgment, preferred activities, gradual shaping of difficult routines, and contingent access to high probability activities through the Premack principle. Reinforcement was adjusted according to individual preferences and gradually reduced as participants became more familiar with the desired routine. The findings do not demonstrate that positive reinforcement alone caused the observed behavioral changes because reinforcement was implemented together with stimulus control, environmental arrangement, peer support, and other behavioral strategies. Instead, the data indicate that reinforcement formed one component of a broader behavioral framework that supported the repetition and stabilization of prayer-related behavior during the study period (Cooper et al., 2020; Miltenberger, 2016).

Evaluative Analysis: From Response Frequency to Self-Directed Prayer Routines

The final stage of the analysis examined whether the behavioral patterns observed during the habituation process indicated a movement from externally prompted prayer behavior toward greater behavioral independence. The evaluation drew on observation records, behavioral modification diaries, and participants' interview accounts rather than on statistical measurement of intervention effectiveness. The analysis focused on several observable indicators, including consistency of prayer initiation, response latency following prayer-related cues, dependence on external reminders, and participants' ability to maintain the routine when reinforcement or environmental support was reduced. These indicators provided a basis for examining behavioral development while remaining consistent with the descriptive qualitative design of the study.

At the beginning of the habituation process, participants' prayer routines showed varying degrees of dependence on external cues. Some participants required smartphone reminders, peer encouragement, or other environmental prompts before initiating prayer, particularly when they were engaged in academic or leisure activities. The behavioral diaries indicated that delayed responses were more commonly reported when competing activities were highly engaging. As the habituation process progressed, some participants reported initiating prayer with fewer reminders and becoming more attentive to naturally occurring prayer cues. This pattern suggests a gradual shift in behavioral control from specifically arranged external prompts toward cues that were already present in the participants' daily environment. In

behavior analysis, such a transition can be understood in terms of the transfer of stimulus control, although the present study did not experimentally establish the extent of this transfer (Miltenberger, 2016).

The reduction of external prompts was particularly relevant to the interpretation of behavioral independence. Participants who initially relied on alarms or peer reminders reported that they gradually became more attentive to prayer times without requiring the same level of external prompting. Some participants also described recognizing prayer time through naturally occurring cues, such as the call to prayer, the transition between academic activities, or the established sequence of daily routines. These accounts were supported by diary entries documenting instances in which prayer was initiated without the previously arranged reminder. Nevertheless, reduced reliance on prompts was not interpreted as complete behavioral autonomy. From a behavior-analytic perspective, behavior remains influenced by environmental contingencies even when artificial prompts are no longer required (Cooper, Heron, & Heward, 2020).

The development of behavioral stability was also reflected in participants' ability to maintain prayer routines under changing circumstances. Academic workload, changes in daily schedules, and temporary disruptions to established routines sometimes created difficulties in maintaining consistency. Nevertheless, participants' accounts indicated that some of them were increasingly able to reorganize their activities around prayer rather than consistently postponing prayer because of competing activities. This pattern is relevant to the concept of behavioral generalization, in which a learned response occurs under conditions that differ from the original learning context (Cooper et al., 2020). The evidence in this study suggests emerging generalization of the prayer routine, although the study did not systematically assess all possible situations or conduct follow-up testing across multiple contexts.

The evaluation also considered the role of reinforcement after its intensity was reduced. Participants who initially responded to social acknowledgment, preferred activities, or reminders were encouraged to continue the prayer routine when those supports became less frequent. Some participants reported that the completion of prayer itself was increasingly experienced as satisfying or relieving, while others emphasized the importance of maintaining a structured daily routine. These experiences were interpreted as naturally occurring consequences or subjective experiences accompanying the behavior rather than as proof that the behavior had become completely self-reinforcing. A consequence can only be identified

as reinforcement in the technical behavior-analytic sense when its functional effect on future behavior is demonstrated (Cooper et al., 2020). The qualitative data therefore support a cautious interpretation of increasing behavioral stability rather than a definitive claim of internalized reinforcement.

The findings also provide an indication of increasing self-regulation in participants' daily routines. Participants described becoming more aware of situations that previously interfered with prayer and developing personal strategies to address those situations. These strategies included completing academic tasks earlier, limiting smartphone distractions near prayer times, preparing prayer-related materials in advance, and adjusting leisure activities around prayer. Such accounts indicate that participants increasingly participated in organizing the antecedent conditions surrounding their own behavior. However, these changes should not automatically be equated with complete spiritual internalization because self-regulation and religious internalization represent broader psychological and religious constructs than those directly measured in this study.

One simulated interview excerpt illustrated a perceived reduction in reliance on external reminders: "I do not need to set as many alarms now, and my friends do not have to remind me as often" (P5, final interview; simulated quotation for practice only). This example suggests a perceived change in the participant's reliance on external prompts to initiate prayer. However, it does not establish that stimulus control had fully shifted from external reminders to naturally occurring environmental cues. Because the quotation is simulated, it should be treated as an illustrative example rather than empirical evidence of an actual participant's experience.

Another simulated interview excerpt illustrated a self-organized strategy for maintaining prayer consistency: "I try to arrange my study tasks earlier, put my phone aside, and prepare for prayer before I become busy" (P8, final interview; simulated quotation for practice only). This example highlights how planning study activities, minimizing potential distractions, and preparing in advance may support the integration of prayer into daily routines. Nevertheless, because the quotation is simulated, it cannot be used as evidence that an actual participant employed these strategies or that they improved prayer consistency.

The term "self-directed prayer routine" in this study is therefore used in a bounded behavioral sense. It refers to the observed and reported consistency with which participants attempted to maintain obligatory prayer despite competing activities and reduced dependence

on external prompts. It does not constitute a measurement of spiritual maturity, religious sincerity, faith intensity, or theological internalization. This distinction is important because behaviorist analysis primarily examines observable behavior and environmental contingencies, whereas the spiritual meaning of worship involves dimensions that cannot be adequately captured through behavioral observation alone (Skinner, 1953). The present findings consequently describe behavioral manifestations of religious discipline rather than making claims about participants' inner religious states.

The qualitative evidence also suggests that the behavioral modification process was not equally effective or equally easy for all participants. Differences in academic workload, daily routines, social environments, and individual responses to reinforcement affected the extent to which participants maintained the desired behavior. Some participants continued to require reminders during periods of increased academic demands, while others reported greater independence from external prompts. Such variation indicates that behavioral stability developed unevenly and should not be represented as a uniform outcome across all twelve participants. The role of the supervising lecturer was similarly limited to providing contextual information about students' behavioral development and was not treated as independent evidence of intervention effectiveness.

An important implication concerns the relationship between behavioral modification and the participants' future roles as prospective elementary school teachers. Participants' experiences in organizing their own prayer routines may provide practical awareness of how environmental cues, reinforcement, gradual behavioral steps, and consistent routines can influence behavior. Nevertheless, the present study did not directly measure teaching competence, classroom management skills, or future pedagogical performance. Therefore, the findings cannot establish that behavioral modification of prayer automatically produces pedagogical maturation. At most, participants' experiences may provide a reflective learning context in which prospective teachers encounter behavioral principles through their own daily routines.

Positioning these findings against earlier research clarifies both their alignment and their contribution. Existing studies have examined prayer habituation and the application of behaviorist or habituation approaches to religious practice mainly in school-based settings, including primary schools, madrasah, and early childhood education (Fatihah, 2019; Mutakin et al., 2014; Nofarinda & Supriyadi, 2024; Nuralim et al., 2023; Putri & Sutarto, 2023; Rofiq,

2023; Rohmaniyah & Rohmani, 2025; Salsabilah & Sari, 2024; Satrianto et al., 2024; Siagian et al., 2025; Yudin et al., 2023), with further work on religious culture, pesantren-based character formation, and adolescents' prayer behavior (Arifin, 2024; Siregar, 2018; Syafe'i, 2017) and on learning theories in worship-related learning (Hidayat & Malihah, 2023). Research outside the Indonesian school context also treats prayer as a practice that can be studied longitudinally in higher education (Wong, 2024) and examines digital tools that support religious practice (Laird et al., 2024), while general habit research explains habit formation through repetition in stable contexts (Lally et al., 2010). The present study is consistent with this literature in treating repeated practice, supportive environmental conditions, and reinforcement as relevant to religious habituation. It differs in three respects. First, several of these studies concern teacher- or institution-led programs, including congregational dhuha prayer, a voluntary rather than obligatory prayer (Fatihah, 2019; Rofiq, 2023), whereas this study concerns obligatory prayers that university students manage within their own daily routines. Second, the earlier studies mainly link habituation to character formation or discipline, whereas this study examines specific behaviorist components, namely stimulus control, shaping, fading, and the Premack principle, and documents prompt use and response latency through participant diaries. Third, the participants are prospective teachers who experience these principles in their own routines. The contribution of this study is therefore a bounded, descriptive account of how these principles were arranged and experienced in higher education, not evidence of their effectiveness.

The evaluation further indicates that the behavioral framework has important limitations when applied to religious practice. Behaviorist procedures are useful for analyzing observable patterns such as prayer initiation, response latency, environmental cues, and reinforcement. They are less capable of explaining theological meaning, personal faith, intention, sincerity, or the spiritual significance that participants attach to worship. Prayer is not merely a behavioral response to an antecedent stimulus and consequence. It also constitutes an act of religious devotion whose meaning cannot be reduced to observable behavioral contingencies. Consequently, behaviorism should be understood in this study as an educational framework for supporting behavioral habituation rather than as a comprehensive theory of religious life.

The interpretation of the findings is also limited by the qualitative design, purposive sample, and absence of a comparison group. The study involved twelve participants within one study program at a single university over a four-week period, so the findings are not

intended to be generalized. Much of the data also came from participants' self-reports in interviews and diaries, which carries a risk of social desirability bias, and no follow up phase was conducted to examine whether the changes were sustained. The evidence is therefore contextual and descriptive and does not establish a universally effective behavioral intervention. Future research could use longer follow up periods, larger and more varied samples, and comparative or single-case designs with systematic measurement of latency and prompt use to examine the sustainability and transferability of these changes.

4. CONCLUSION

This study concludes that the application of behaviorist principles, particularly stimulus control, environmental arrangement, positive reinforcement, shaping, fading, and the Premack principle, was associated with observable and reported changes in the prayer routines of twelve PGMI students at UIN Fatmawati Sukarno Bengkulu. The findings indicate greater consistency in prayer initiation, a lower mean response latency in Week 4 than in Week 1 (15.5 vs. 7.2 minutes), although not for every participant, and fewer participants still using artificial reminders (10 vs. 5 of 12) during the habituation process, based on participants' accounts, behavioral diaries, and observation records. These findings should not be interpreted as evidence that behaviorist techniques alone caused the observed changes or as proof of permanent internalization of spiritual discipline, given the descriptive qualitative design and absence of a control or comparison group. The behavioral modification process nevertheless provided a structured educational framework that supported participants in organizing environmental cues, responding to reinforcement, and gradually developing more self-initiated prayer routines. Participants' experiences may also provide practical insights for prospective teachers regarding behavioral habituation and character development, although pedagogical competence was not directly measured in this study. Further research with longer follow-up periods, broader samples, and comparative designs is needed to examine the sustainability and transferability of these behavioral changes.

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