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Time Attitude, Delayed Gratification and Job Satisfaction of Marine Technical Employees

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Abstract

The maritime industry places exceptional psychological demands on marine technical employees, who operate in high-risk, time-sensitive environments characterized by extended rotations and social isolation. While external factors influencing job satisfaction have been extensively studied, the internal psychological mechanisms remain underexplored. This cross-sectional study examined the relationships among time attitude, delayed gratification, and job satisfaction in a sample of 392 marine technical employees recruited from two companies in Singapore and Malaysia. Participants completed the Adolescent and Adult Time Inventory—Time Attitudes Scale (AATI-TA), the Delay of Gratification Questionnaire (DoGQ), and the Job Satisfaction Survey (JSS). Results indicated that time attitude dimensions exhibited a balanced pattern, with positive dimensions above the median and negative dimensions at moderate levels. Delay of gratification significantly predicted job satisfaction ($\beta = .223$, $p < .001$), while Present Positive time attitude emerged as the only temporal dimension directly associated with job satisfaction ($\beta = .212$, $p = .010$). Past Negative time attitude predicted lower delay of gratification ($\beta = -.143$, $p = .034$). Contextual factors—particularly work location, work type, and working language—significantly influenced time attitude dimensions, whereas basic demographic characteristics showed limited effects. The findings suggest that present-moment positive engagement and self-regulatory capacity may function as psychological resources supporting job satisfaction in demanding technical occupations. A targeted psychological intervention program is proposed to enhance present-positive orientation and delayed gratification among marine technical personnel.

Keywords: *time attitude; delayed gratification; job satisfaction; marine technical employees; maritime industry; offshore workers; self-regulation; cross-sectional study*

1. Introduction

The maritime industry constitutes a cornerstone of global transportation and trade, relying substantially on the expertise and resilience of marine technical employees. These professionals—responsible for the maintenance, repair, and operation of complex onboard systems—operate in uniquely demanding environments characterized by extended periods at sea, rigorous schedules, social isolation, and high-stakes decision-making (Huang et al., 2020). Positions involving ship maintenance, offshore engineering, and underwater technology entail extreme operational risks and time sensitivity, placing employees in long-term shift systems and high-intensity work states that may contribute to psychological stress accumulation and occupational burnout. While existing studies have predominantly focused on external motivational factors influencing job satisfaction, less attention has been directed toward the mechanisms through which individual internal psychological variables shape work-related outcomes in this population.

Time attitude refers to an individual's emotional and cognitive evaluation of the past, present, and future (Zimbardo & Boyd, 1999). Within the marine technology industry, time attitude assumes particular importance given the tight work pace, extended task cycles, and frequent conflicts between work and personal life. Research indicates that time attitude relates not only to work performance but also to mental health outcomes (Sharma & De, 2020). Employees with positive future time attitudes tend to formulate long-term career plans, establish clear professional goals, and maintain persistence when facing occupational difficulties.

Delayed gratification—the capacity to regulate impulses and resist short-term temptations in pursuit of meaningful long-term outcomes—is increasingly conceptualized as a facet of self-regulation and executive functioning (Duckworth et al., 2020;

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Steinbeis, 2022). This ability holds particular relevance in high-pressure work environments where employees must navigate trade-offs between immediate comfort and long-term career benefits. Studies have demonstrated that delayed gratification correlates significantly with work persistence and achievement of long-term career goals (Chen et al., 2021). In engineering contexts, employees with higher delayed gratification capacity demonstrate greater willingness to engage in continuous professional training and technical certification, even absent immediate returns.

Job satisfaction—the degree to which individuals identify with and positively evaluate their work (Spector, 1985)—represents a critical outcome in occupational psychology, functioning as an indicator of employee well-being, retention propensity, and performance. Within the marine technology industry, job satisfaction is shaped not only by physical working conditions and compensation but also by employees' psychological characteristics, including time management ability, self-efficacy, and sense of goal control (Li & Zhang, 2020). Employees with positive future time attitudes may be better equipped to interpret current work tasks within developmental frameworks, thereby reducing sensitivity to short-term difficulties and enhancing satisfaction.

Recent empirical work has begun exploring the interactive relationships among these constructs. Tan et al. (2022), studying engineering personnel in marine and offshore operations, found that employees with positive future time attitudes and high delayed gratification capacity reported stronger psychological resilience and career commitment when facing high-intensity shifts and isolated work. Their findings suggested that delayed gratification may partially moderate the relationship between time attitude and job satisfaction, with the positive impact of time attitude more pronounced among individuals with higher delay capacity.

Despite growing recognition of these psychological factors, limited research has systematically examined their collective influence within the marine technical workforce. The distinctive features of this occupational context—difficult environments, long rotations, and high-stakes operations—underscore the importance of understanding how time attitude and delayed gratification contribute to job satisfaction. Such understanding could inform organizational strategies for mitigating burnout, enhancing safety, and promoting employee well-being in one of the most demanding industrial sectors.

The present study therefore aimed to examine the relationships among time attitude, delayed gratification, and job satisfaction among marine technical employees. Specifically, it sought to: describe the demographic and occupational profile of respondents; determine levels of time attitude, delayed gratification, and job satisfaction; compare these variables across demographic subgroups; examine the relationships among the three constructs; and propose a psychological intervention program based on the findings.

2. Review of Related Literature

2.1 Time Attitude: Conceptual Foundations and Occupational Applications

Time attitude refers to an individual's emotional and cognitive evaluations of past experiences, current life situations, and future expectations (Zimbardo & Boyd, 1999). Distinguished from time management—which emphasizes scheduling efficiency—time attitude focuses on how people internally experience and value time across temporal orientations. Zimbardo's Time Perspective Theory delineates six dimensions: past-positive, past-negative, present-hedonistic, present-fatalistic, future-positive, and future-negative, each contributing to an individual's stable temporal orientation (Zimbardo & Boyd, 1999).

Within occupational psychology, time attitude plays a pivotal role in shaping professional behavior, decision-making, and career trajectories. Mello and Worrell (2019) emphasized that time attitude strongly predicts motivational components including persistence, optimism, planning capacity, and self-regulation. Employees with future-positive orientations engage more frequently in proactive career management behaviors such as skill acquisition and long-term goal planning (Sharma & De, 2020). Zacher and Frese (2009) found that future time attitude significantly predicted organizational citizenship behavior and commitment to continuous improvement among manufacturing workers. In Chinese contexts, Xu Hui et al. (2020) demonstrated that future-positive time attitudes facilitate career adaptability and emotional flexibility during workplace transitions. Longitudinal research further indicates that time attitude serves as a stable predictor of personal growth, adaptability, and achievement across developmental stages (Worrell et al., 2013).

The relevance of time attitude is particularly pronounced in industries requiring sustained focus and delayed rewards, such as marine technology. Marine engineers, offshore technicians, and shipyard specialists endure prolonged isolation, extended rotations, and limited family contact. In such settings, future-positive orientation may function as a psychological buffer against fatigue and disengagement, enabling employees to interpret current hardships as investments in future success (Tan et al., 2022). Conversely, negative time orientations may amplify perceptions of monotony and permanence, increasing withdrawal risk. Tools including the Zimbardo Time Perspective Inventory (ZTPI) and Adolescent and Adult Time Inventory—Time Attitudes (AATI-TA) have been employed to assess temporal profiles for career development and coaching applications (Mello & Worrell, 2019).

2.2 Delayed Gratification: Self-Regulation in High-Demand Contexts

Delayed gratification—the capacity to resist immediate rewards in favor of more substantial long-term outcomes—represents a foundational construct in self-regulation and personality psychology (Mischel, 1970). Originating from the marshmallow test paradigm, the concept has demonstrated robust predictive validity for adult success, health outcomes, academic achievement, and career satisfaction. Within workplace contexts, delayed gratification is closely linked to sustained motivation, goal-oriented behavior, resilience, and long-term planning (Duckworth et al., 2020; Steinbeis, 2022).

Theoretical frameworks including Temporal Motivation Theory and dual-system models of self-regulation (Baumeister et al., 2007) conceptualize delayed gratification as operating at the intersection of motivational systems and cognitive control. Individuals must weigh delayed outcomes against immediate temptations, a calculation mediated by personal, situational, and cultural factors. Hoerger, Quirk, and Weed (2011) demonstrated that individuals with greater delay capacity report fewer instances of job-hopping and greater likelihood of pursuing promotion through formal channels. Chen, Wang, and Li (2021) found that employees with higher delayed gratification reported greater career persistence and satisfaction with long-term goal achievement.

In marine and offshore contexts, delay of gratification assumes critical importance. Tan and Low (2021), studying 132 offshore engineers and technicians in Singapore and Batam, found that higher delay of gratification scores were significantly associated with greater organizational commitment and lower turnover intention ($\beta = -0.37$, $p < .01$). Workers with stronger delay capacity viewed extended offshore deployments as strategic career investments. Hafiz and Noor (2020) examined 89 marine crew members and identified significant negative correlations between delay tolerance and risk-taking behavior ($r = -.42$, $p < .05$), suggesting that poor delay capacity may compromise safety compliance.

Delayed gratification is modifiable through intervention. Baumeister et al. (2007) proposed that self-control operates like a muscle—depletable temporarily but strengthenable through consistent practice. Cognitive-behavioral techniques, mindfulness practices, and goal-setting frameworks have demonstrated efficacy in increasing delay tolerance. Nguyen et al. (2022) found that delay of gratification positively predicted psychological resilience ($r = .45$) among port engineers, which in turn negatively predicted burnout, suggesting potential training targets for high-demand occupations.

2.3 Job Satisfaction: Multidimensional Construct in Marine Contexts

Job satisfaction is defined as an employee's overall affective and cognitive evaluation of work experience, encompassing emotional reactions to tasks, workplace conditions, social relations, and career progression (Li & Zhang, 2020; Spector, 1985). As one of the most extensively researched variables in organizational psychology, job satisfaction influences employee retention, engagement, productivity, and psychological well-being (Judge et al., 2017).

Spector's (1985, 1997) Job Satisfaction Survey (JSS) conceptualizes satisfaction across nine dimensions: pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication. In offshore and marine settings, these dimensions assume distinctive weights due to operational characteristics. Job security and rest time allocation often outweigh monetary compensation (Yap & Koh, 2019), while working conditions—accommodation, food quality, internet access—exert disproportionate influence in enclosed, isolated environments (Lee et al., 2020).

Recent research highlights the role of psychological capital—self-efficacy, optimism, resilience, hope—as a buffer against dissatisfaction. Zhang and Wang (2022) found that psychological capital mediates the relationship between environmental stressors and job satisfaction in offshore logistics teams. Perceived organizational support, manifested through safety training, transparent communication, and fair promotion, significantly correlates with higher satisfaction and lower turnover intentions among Chinese maritime crews (Chen et al., 2020).

Self-Determination Theory (Deci & Ryan, 2000) provides a relevant framework for understanding satisfaction in physically demanding roles. Employees experiencing autonomy, competence, and relatedness demonstrate greater engagement and satisfaction. Lin and Xie (2021) applied this framework to port maintenance workers, showing that psychological need satisfaction predicted long-term occupational well-being even in routine tasks. Leadership behaviors fostering psychological safety—where employees feel comfortable voicing concerns—enhance satisfaction and engagement (Wang & Liu, 2020). Transformational leadership practices in port operations have been shown to increase job satisfaction through enhanced trust and perceived fairness (Duan et al., 2021).

Job crafting, or proactive modification of tasks and relationships, represents another satisfaction determinant. Xu and Zhao (2023) found that job crafting interventions increased satisfaction among marine maintenance staff by enhancing perceived contribution and control. Work-family conflict remains a critical challenge, with extended separations from family cited as a primary reason for early occupational exit. Structured shore leave policies and family-inclusive support programs significantly reduce dissatisfaction arising from work-family tensions (Zhang et al., 2021).

Cross-cultural and demographic factors also shape satisfaction. Younger employees prioritize career development; older workers value stability and respect (Huang & Tan, 2022). Mohd and Ismail (2018), studying 210 Malaysian shipyard engineers, identified nature of work ($\beta = 0.48$) and supervisory support ($\beta = 0.33$) as strongest positive predictors of satisfaction. Nguyen et al. (2021) found that job satisfaction fully mediated the relationship between perceived organizational support and commitment among offshore engineers. Furthermore, job satisfaction correlates with safety compliance; dissatisfied employees demonstrate greater procedural violations (Park et al., 2017).

2.4 Interrelationships Among Time Attitude, Delayed Gratification, and Job Satisfaction

Emerging empirical research supports interconnected roles of time attitude, delayed gratification, and job satisfaction, particularly within high-demand sectors. Time attitude, especially future-positive orientation, influences goal-setting behaviors and long-term planning linked to job satisfaction. Chen et al. (2021) found that employees with high future-positive attitudes demonstrated greater resilience and satisfaction in demanding roles, interpreting short-term sacrifices as long-term career investments. Conversely, future-negative or present-fatalistic attitudes associate with lower emotional engagement and increased burnout risk (Liu & Huang, 2020).

Delayed gratification relates closely to time perspective. Li et al. (2023) found that individuals with strong delay tendencies reported higher job satisfaction in occupations with deferred rewards, such as engineering and offshore work, demonstrating greater task persistence and reduced impulsive quitting. Zhou and Yang (2022), using longitudinal survey data from industrial technicians, found that future-oriented employees displayed stronger impulse control and self-discipline, mediated by belief in attainable goals.

The mediating function of delayed gratification between time attitude and job satisfaction holds particular relevance in marine technology, where career advancement proceeds slowly and task completion spans extended periods. Wang et al. (2023), studying offshore mechanics, showed that future-positive individuals with strong delay capacity reported significantly higher job satisfaction, even in monotonous or isolated environments. Organizational justice and reward visibility moderate this pathway; transparent performance appraisal systems amplify the relationship between future time perspective and retention through enhanced satisfaction (Qiu et al., 2022).

Work environments fostering autonomy, growth, and meaningful feedback enhance both future time attitudes and delayed gratification skills. Lin et al. (2021) demonstrated that structured mentoring and future-focused career counseling improved goal persistence among marine engineers, resulting in higher work engagement and satisfaction. Tan, Lim, and Goh (2022), employing structural equation modeling with offshore engineering samples, found that delayed gratification partially moderates the time attitude—job satisfaction relationship. Employees with both positive future time perspective and high delay tolerance reported the highest satisfaction and organizational commitment levels, even under challenging offshore conditions. These findings suggest that psychological traits interact synergistically rather than functioning independently.

2.5 Synthesis and Gaps

The literature reviewed establishes time attitude, delayed gratification, and job satisfaction as interrelated psychological constructs with demonstrated relevance to occupational outcomes. Time attitude provides cognitive-emotional orientation toward past, present, and future; delayed gratification represents behavioral self-regulation capacity for pursuing long-term goals; job satisfaction emerges as the evaluative outcome shaped by these internal resources and external work conditions. Theoretical models increasingly recognize that these constructs operate synergistically, with future-positive orientation facilitating delay capacity, which in turn supports sustained satisfaction in demanding roles.

However, several gaps warrant attention. First, limited research has examined these constructs simultaneously within marine technical populations specifically. Existing studies draw predominantly from manufacturing, port operations, or general offshore samples that may not reflect the distinctive psychological demands of marine technical work—extended rotations, high-stakes decision-making, social isolation, and delayed reward structures. Second, the preponderance of cross-sectional designs precludes causal inference regarding directional relationships among variables. Whether time attitude cultivates delay capacity, or whether individuals with stronger self-regulation develop more positive time orientations, remains unclear. Third, cultural variations in time attitude and delay patterns require further investigation; Lee and Goh (2020) identified differences between Southeast Asian and Western employees in temporal orientation and team functioning, suggesting that findings may not generalize uniformly across cultural contexts. Fourth, intervention studies testing the trainability of time perspective and delay capacity in occupational settings are scarce, limiting evidence-based recommendations for organizational practice. Finally, the role of organizational context—leadership quality, reward systems, safety climate—as a potential moderator of these psychological relationships remains underexplored. Addressing these gaps through targeted empirical investigation can inform both theoretical development and practical intervention design for enhancing job satisfaction in high-demand technical occupations.

3. Methodology

3.1 Research Design

This study employed a cross-sectional correlational design to examine the relationships among time attitude, delayed gratification, and job satisfaction among marine technical employees. This design was selected to capture natural associations between variables without experimental manipulation, offering efficiency in data collection and suitability for examining relatively stable psychological traits and attitudinal constructs (Creswell & Creswell, 2018).

3.2 Participants

Respondents comprised 392 marine technical employees recruited from two companies: MTC Offshore Engineering Company (Singapore) and Malaysia Shipyard & Engineering (MSC) (Malaysia). Participants included offshore workers (hull structure technicians, welders, mechanics), technical support personnel (offshore engineering coordinators, project planners), and maintenance engineers (equipment maintenance engineers, ship engineers). The sample covered multiple job levels from entry-level technicians to management-level technical support staff. Age ranged from 25 to 55 years, with work experience spanning 1 to 30 years. Nationalities included Singaporean (29.1%), Malaysian (36.2%), and Chinese (34.7%).

3.3 Measures

Time Attitude. The Adolescent and Adult Time Inventory—Time Attitudes Scale (AATI-TA; Worrell & Mello, 2007) assessed participants' emotional and cognitive evaluations of past, present, and future. The scale comprises 30 self-report items across six dimensions: Past Positive, Past Negative, Present Positive, Present Negative, Future Positive, and Future Negative (five items per dimension). Items are rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The Chinese version has demonstrated good psychometric properties, with an overall Cronbach's alpha coefficient of 0.85 (Mello & Worrell, 2019).

Delayed Gratification. The Delay of Gratification Questionnaire (DoGQ; Hoerger, Quirk, & Weed, 2011) assessed individuals' tendency to postpone immediate rewards for long-term goals. The instrument contains 35 self-report items rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), evaluating four core domains: food, social interaction, money, and achievement. Higher scores indicate stronger delay tendencies. The Chinese version (Chen et al., 2021) has demonstrated satisfactory internal consistency, with an overall Cronbach's alpha coefficient of 0.83.

Job Satisfaction. The Job Satisfaction Survey (JSS; Spector, 1985) measured participants' satisfaction across nine dimensions: pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures, coworkers, nature of work, and communication. The instrument contains 36 self-report items rated on a 6-point Likert scale (1 = disagree very much to 6 = agree very much). The

Chinese version (Li & Zhang, 2020) has demonstrated strong internal consistency, with an overall Cronbach's alpha coefficient of 0.88.

3.4 Procedure

Following an extensive literature review, the questionnaire battery was assembled to measure core psychological variables. The researcher submitted the study protocol to the university's ethics review committee to ensure compliance with ethical standards including informed consent, participant anonymity, and responsible data usage.

The research team communicated with Human Resources departments at MSC Shipyard (Malaysia) and MTC Marine Technology Company (Singapore), presenting study objectives and data handling procedures. Formal written approval and cooperation were obtained from both organizations.

During data collection, electronic questionnaires were distributed anonymously via online platforms (Wenjuanxing and Google Forms), allowing participants to complete surveys independently. Data collection lasted approximately three weeks. Incomplete or invalid responses were screened and excluded, yielding the final sample of 392 respondents.

3.5 Data Analysis

Data analysis employed SPSS 25.0. Descriptive statistics (means, standard deviations, frequencies) summarized sample characteristics and variable distributions. Independent samples t-tests examined gender differences. Multivariate analysis of variance (MANOVA) and ANOVA assessed differences in study variables across demographic subgroups. Pearson correlation analysis examined relationships among time attitude dimensions, delayed gratification, and job satisfaction. Multiple linear regression analysis assessed predictive relationships, with time attitude dimensions predicting delayed gratification and job satisfaction, and delayed gratification predicting job satisfaction. Statistical significance was set at $p < .05$.

3.6 Ethical Considerations

Ethical approval was obtained from the Ethics Committee of Lyceum of the Philippines University—Batangas. The survey was conducted online; participants first received information about study purpose and significance, with informed consent guaranteed and voluntary participation emphasized. Those not agreeing did not participate. All responses were anonymous, and data were stored with password protection to prevent disclosure of personal information.

4. Results and Discussion

4.1 Sample Profile

The sample comprised 392 marine technical employees, predominantly male (96.4%) with bachelor's degrees (49.7%) or master's degrees and above (26.0%). The majority were married (94.4%). Work experience was distributed across categories: 3 years or less (23.5%), 4–6 years (30.1%), 7–10 years (28.3%), and 11 years or more (18.1%). Most participants held technician or engineer positions (64.0%), followed by senior engineer (21.9%), supervisor/foreman (9.2%), and management (4.9%). Work types included regular day shift (55.6%), shift work (27.0%), and project-based or overseas mission-based assignments (17.4%). Nationalities were Malaysian (36.2%), Chinese (34.7%), and Singaporean (29.1%). Primary work locations were Singapore (26.8%), Malaysia (26.8%), China (26.8%), and overseas (19.6%). Working languages were English (42.1%), Mandarin (37.2%), and other languages (20.7%). *(See Section 7, Table 1)*

4.2 Time Attitude Profile

Respondents demonstrated a relatively high and coherent overall time attitude ($M = 91.99$, $SD = 6.52$). All three positive time dimensions—Past Positive ($M = 18.12$, $SD = 4.29$), Present Positive ($M = 17.92$, $SD = 4.17$), and Future Positive ($M = 17.21$, $SD = 4.76$)—were above the median, indicating favorable evaluations across temporal domains. Negative dimensions were at moderate levels: Past Negative ($M = 12.38$, $SD = 4.23$), Present Negative ($M = 13.49$, $SD = 3.39$), and Future Negative ($M = 12.87$, $SD = 4.88$). This pattern suggests a balanced temporal orientation characterized by positive dominance with retained realism rather than unrealistic optimism. *(See Section 7, Table 2)*

4.3 Group Comparisons

Gender differences. Independent samples t-tests revealed no significant gender differences in any time attitude dimension or in total time attitude ($ps > .05$). A significant gender difference emerged for delay of gratification, with male respondents reporting higher scores ($M = 110.46$, $SD = 9.40$) than female respondents ($M = 108.38$, $SD = 10.51$), $t(390) = 2.04$, $p = .042$, Cohen's $d = 0.21$. No significant gender difference was found in job satisfaction.

Demographic and contextual influences on time attitude. Multivariate analyses indicated that time attitude dimensions were more strongly associated with occupational and contextual factors than with basic demographic characteristics. Primary work location significantly influenced Past Positive ($p = .002$), Past Negative ($p = .002$), Present Positive ($p = .001$), Present Negative ($p = .039$), Future Positive ($p = .002$), and Future Negative ($p = .003$). Working language significantly affected Past Positive ($p = .022$), Present Positive ($p = .018$), and total time attitude ($p = .018$). Years of work experience influenced Past Positive ($p = .033$) and Present Positive ($p = .012$). Job level affected Future Positive ($p = .046$) and Future Negative ($p = .045$). Work type influenced Past Negative ($p = .050$), Present Positive ($p = .044$), and showed marginal effects on Present Negative ($p = .099$) and Future Negative ($p = .062$). Education level affected Past Negative ($p = .003$) and Present Negative ($p = .038$). Marital status influenced Present Positive ($p = .018$). Nationality showed no significant effects on any time attitude dimension.

Demographic influences on delayed gratification. Among all demographic and work-related variables examined, only primary work location showed a statistically significant effect on total delay of gratification ($p = .007$). Education level, marital status, years of work experience, job level, work type, nationality, and working language did not demonstrate significant differences.

Demographic influences on job satisfaction. None of the demographic or work-related variables examined—education level, marital status, work experience, job level, work type, nationality, work location, or working language—showed statistically significant effects on total job satisfaction. *(See Section 7, Table 3ff)*

4.4 Correlations Among Study Variables

Correlation analysis revealed a coherent internal structure among time attitude dimensions. Positive dimensions (Past Positive, Present Positive, Future Positive) were strongly and positively intercorrelated (r ranging from .41 to .76, ps < .001). Negative dimensions (Past Negative, Present Negative, Future Negative) were positively intercorrelated (r ranging from .43 to .70, ps < .001). Each positive dimension showed strong negative correlations with its corresponding negative dimension (e.g., Past Positive and Past Negative: $r = -.73$, $p < .001$).

Delay of gratification was positively associated with all positive time dimensions: Past Positive ($r = .25$, $p < .001$), Present Positive ($r = .25$, $p < .001$), and Future Positive ($r = .11$, $p = .038$). Delay of gratification was negatively associated with Past Negative ($r = -.22$, $p < .001$). Correlations with Present Negative and Future Negative were not significant.

Job satisfaction was positively correlated with Present Positive ($r = .17$, $p = .001$) and Past Positive ($r = .10$, $p = .042$), and negatively correlated with Past Negative ($r = -.10$, $p = .046$), Present Negative ($r = -.10$, $p = .046$), and marginally with Future Negative ($r = -.10$, $p = .057$). Total time attitude did not significantly correlate with job satisfaction ($r = .05$, $p = .352$). Delay of gratification showed a significant positive correlation with job satisfaction ($r = .22$, $p < .001$). *(See Section 7, Tables 13)*

4.5 Regression Analyses

Time attitude predicting delayed gratification. A multiple linear regression examining whether time attitude dimensions predict delay of gratification was statistically significant, $F(7, 384) = 5.89$, $p < .001$, explaining 8.4% of the variance ($R^2 = .084$, Adjusted $R^2 = .07$). Past Negative showed a significant negative effect ($\beta = -.143$, $p = .034$), indicating that individuals with more negative past evaluations demonstrated weaker delay of gratification capacity. Total time attitude showed a significant positive effect ($\beta = .115$, $p = .016$), suggesting that a more integrated and positive temporal orientation was associated with stronger self-regulatory capacity. Other time dimensions did not reach statistical significance. *(See Section 7, Table 14)*

Time attitude predicting job satisfaction. The regression model examining time attitude dimensions as predictors of job satisfaction was statistically significant, $F(7, 384) = 2.20$, $p = .042$, although explanatory power was small (Adjusted $R^2 = .018$). Among all dimensions, only Present Positive significantly predicted job satisfaction ($\beta = .212$, $p = .010$). Past-oriented and future-oriented dimensions, as well as total time attitude, did not show significant effects. *(See Section 7, Table 15)*

Delayed gratification predicting job satisfaction. Simple linear regression indicated that delay of gratification significantly predicted job satisfaction, $F(1, 390) = 20.49$, $p < .001$, explaining 4.7% of the variance (Adjusted $R^2 = .047$). Delay of gratification showed a positive effect ($\beta = .223$, $p < .001$), indicating that employees with stronger capacity to postpone immediate rewards for long-term goals reported higher job satisfaction. *(See Section 7, Table 16)*

4.6 Discussion

The present study examined relationships among time attitude, delayed gratification, and job satisfaction in a sample of marine technical employees. The findings contribute to understanding how internal psychological resources function

within demanding occupational contexts characterized by extended rotations, social isolation, and delayed reward structures. Several patterns warrant discussion.

Time Attitude Profile and Contextual Embeddedness

Respondents demonstrated a balanced temporal orientation, with positive dimensions above the median and negative dimensions at moderate rather than extremely low levels. This configuration suggests adaptive functioning: individuals maintain favorable evaluations across temporal domains while retaining realistic awareness of past difficulties, present stressors, and future uncertainties. Such balance may enhance psychological resilience by promoting cautious optimism and responsible planning rather than unrealistic optimism or fatalistic pessimism. The finding aligns with time perspective theory, which posits that adaptive temporal profiles involve integrated positive orientations accompanied by moderate sensitivity to challenges (Zimbardo & Boyd, 1999; Stolarski et al., 2015).

A notable pattern emerging from subgroup analyses was that time attitude dimensions were more strongly associated with occupational and contextual factors—work location, work type, working language—than with basic demographic characteristics. This suggests that temporal cognitive-emotional orientations are not merely dispositional traits but are shaped by lived environmental conditions. Employees working in different locations may encounter varying organizational cultures, resource availability, and living conditions that influence how they emotionally evaluate past, present, and future. Similarly, working language may function as a proxy for communication efficiency, social integration, and cultural alignment, all of which can affect temporal experience. These findings extend theoretical perspectives emphasizing the social embeddedness of time cognition (Mello & Worrell, 2019) and underscore the importance of considering occupational context when examining time-related psychological constructs.

Present Positive Orientation and Job Satisfaction

Among all time attitude dimensions, only Present Positive significantly predicted job satisfaction. This finding diverges from research in white-collar or managerial populations, where future orientation often emerges as a stronger predictor of career satisfaction and motivation (Zacher & Frese, 2009; Sharma & De, 2020). The present result may reflect the unique occupational ecology of marine technical work, which is characterized by task immediacy, operational unpredictability, and high situational demands. In such environments, satisfaction may derive more directly from real-time problem-solving, immediate task completion, and momentary perceptions of control than from long-term career planning. Technical roles emphasizing procedural accuracy, equipment performance, and safety-critical decisions may not strongly involve retrospective emotional processing or distant future projections; rather, present-moment engagement with work tasks becomes psychologically salient.

This interpretation aligns with findings from Lin and Xie (2021), who demonstrated that even in routine tasks, psychological need satisfaction—particularly competence and autonomy experienced in the moment—predicted long-term occupational well-being among port workers. The present results suggest that interventions targeting present-moment positive engagement—strengths-based approaches, task accomplishment recognition, present-focused coping strategies—may be particularly effective for enhancing job satisfaction in technical and high-demand occupations.

The non-significant effects of future-oriented dimensions warrant consideration. Marine technical employees often work in project-based or voyage-dependent settings where schedules, assignments, and environmental conditions are externally determined. Under such conditions, future-oriented cognition may have limited influence on subjective work satisfaction, as long-term planning is constrained by organizational and logistical factors. This finding highlights the importance of occupational structure as a boundary condition for temporal orientation theories.

Delayed Gratification as Psychological Resource

Delay of gratification significantly predicted job satisfaction, with effect sizes comparable to or exceeding those of time attitude dimensions. This finding suggests that in occupational contexts characterized by delayed reward structures, the capacity to tolerate short-term discomfort for future gains functions as an important psychological resource. Marine technical employees endure challenging working conditions—physical demands, environmental uncertainty, social isolation—before seeing tangible outcomes such as successful equipment restoration, voyage completion, or career advancement. Individuals with stronger delay capacity may experience less psychological strain and greater work-related fulfillment under such conditions, as they can

maintain focus on long-term benefits rather than becoming preoccupied with immediate hardships.

The significant negative relationship between Past Negative time attitude and delayed gratification provides additional insight. Negative evaluations of past experiences may reduce individuals' confidence in long-term outcomes, thereby weakening motivation to sacrifice immediate rewards. This aligns with self-regulation theory, which proposes that trust in future outcomes is essential for delaying gratification (Baumeister et al., 2007). Individuals who perceive their past as disappointing or painful may have difficulty believing that current efforts will yield future rewards, leading to reduced willingness to postpone immediate gratification.

The finding that delayed gratification demonstrated stronger predictive power than overall time attitude suggests that behavioral self-control mechanisms may be more influential than abstract temporal beliefs in shaping work satisfaction within this occupational group. While time attitude reflects cognitive-emotional perspectives, delayed gratification represents an action-oriented capacity directly tied to coping with delayed outcomes—a central feature of marine technical work. This distinction supports theoretical differentiation between temporal cognition and temporal self-regulation in occupational psychology research.

Absence of Direct Demographic Effects on Job Satisfaction

The finding that no demographic or work-related variables significantly predicted job satisfaction merits consideration. This pattern suggests that job satisfaction in the present sample is influenced more by psychological and attitudinal factors than by observable demographic characteristics. Individuals with different educational backgrounds, roles, or work arrangements may experience similar satisfaction levels if their psychological interpretation of work is comparable. This aligns with contemporary job satisfaction theories emphasizing intrinsic perceptions—meaning, autonomy, fairness, emotional experiences—over static personal attributes (Judge et al., 2017). The contrast between these findings and those for time attitude and delayed gratification reinforces the theoretical rationale for examining psychological pathways as mediators linking contextual conditions to satisfaction outcomes.

Limitations

Several limitations should be considered when interpreting these findings. First, the cross-sectional design precludes causal inference regarding directional relationships among variables. Whether time attitude cultivates delay capacity, whether individuals with stronger self-regulation develop more positive time orientations, or whether reciprocal relationships exist cannot be determined from these data. Second, the sample was predominantly male (96.4%), reflecting the gender composition of the marine technical workforce but limiting generalizability to female employees in similar roles. Third, data were collected from two companies in Singapore and Malaysia; findings may not generalize to marine technical employees in other national or cultural contexts, particularly given evidence of cultural variation in time attitude patterns (Lee & Goh, 2020). Fourth, self-report measures may be subject to social desirability and common method bias, although anonymous administration likely mitigated these concerns. Fifth, the modest explained variance in job satisfaction (Adjusted R^2 = .018 for time attitude; .047 for delayed gratification) indicates that substantial variance remains unexplained by the studied psychological variables, underscoring the multifactorial nature of job satisfaction and the importance of organizational and environmental factors not captured in this study.

Implications

Notwithstanding these limitations, the findings carry implications for theory and practice. Theoretically, the results support differentiating between temporal cognition and temporal self-regulation as distinct but related psychological resources in occupational contexts. The significant role of present-positive orientation challenges assumptions that future orientation universally dominates work-related outcomes, suggesting that occupational structure moderates the predictive validity of temporal constructs. Practically, the findings suggest that interventions targeting present-moment positive engagement and delayed gratification capacity may enhance job satisfaction among marine technical employees. Such interventions could include strengths-based task reflection, recognition of daily accomplishments, present-focused coping strategies, goal-setting frameworks emphasizing long-term reward structures, and cognitive reframing techniques for interpreting current efforts as investments in future outcomes. Organizations might also consider psychological profiling incorporating time attitude and delay capacity in recruitment and development contexts, although such applications require further validation.

5. Conclusions and Recommendations

5.1 Conclusions

This study examined the relationships among time attitude, delayed gratification, and job satisfaction among marine technical employees in

Singapore and Malaysia. Based on the findings, the following conclusions are drawn:

First, marine technical employees in this sample demonstrated a balanced temporal orientation, with positive evaluations of past, present, and future predominating while negative evaluations remained at moderate levels. This pattern suggests adaptive psychological functioning characterized by optimistic realism rather than unrealistic optimism or fatalistic pessimism. Time attitudes were more strongly associated with occupational and contextual factors—work location, work type, working language, years of experience—than with basic demographic characteristics, indicating that temporal cognitive-emotional orientations are shaped by lived environmental conditions rather than being purely dispositional traits.

Second, delayed gratification significantly predicted job satisfaction, with employees reporting stronger capacity to postpone immediate rewards for long-term goals also reporting higher work satisfaction. This finding supports conceptualizing delayed gratification as a psychological resource that enables employees to tolerate short-term discomfort inherent in demanding technical occupations, maintaining focus on long-term benefits rather than becoming preoccupied with immediate hardships.

Third, present-positive time attitude emerged as the only temporal dimension directly associated with job satisfaction, while past-oriented and future-oriented dimensions showed no significant direct effects. This pattern likely reflects the unique occupational ecology of marine technical work, characterized by task immediacy, operational unpredictability, and high situational demands, where satisfaction derives more directly from present-moment engagement than from reflections on past experiences or expectations about the future.

Fourth, contextual factors—particularly work location—significantly influenced both time attitude dimensions and delayed gratification, whereas no demographic variables directly predicted job satisfaction. This pattern reinforces the importance of environmental and organizational conditions in shaping psychological resources and suggests that job satisfaction is influenced more through psychological mechanisms than through direct demographic pathways.

Fifth, the overall pattern of findings supports a differentiated view of temporal psychology in occupational contexts: time attitude and delayed gratification represent distinct but related psychological resources, with behavioral self-regulation capacity demonstrating stronger direct associations with job satisfaction than abstract temporal beliefs in this population.

5.2 Recommendations

Practical recommendations for organizations. Based on the findings, organizations employing marine technical personnel may consider implementing targeted psychological interventions. Given the significant association between present-positive orientation and job satisfaction, interventions should include modules enhancing present-moment positive engagement: structured reflection on daily accomplishments, recognition of task completion, and strengths-based approaches to work activities. Given the predictive role of delayed gratification, interventions should also incorporate goal-setting frameworks emphasizing long-term reward structures, cognitive reframing techniques that interpret current efforts as investments in future outcomes, and gradual exposure to delay tolerance through structured challenges. The proposed eight-week intervention program (detailed in Table 17 of the original dissertation) provides a framework integrating these elements.

Human resource practices may benefit from incorporating psychological considerations. While demographic screening for time attitude or delay capacity in recruitment requires further validation, organizations could offer voluntary assessment and development opportunities focusing on these psychological resources. Given the influence of work location and work type on time attitudes, organizations should attend to environmental conditions—resource availability, living conditions, communication support—that may shape employees' temporal experiences. Provision of stable, predictable work environments where feasible may support development of adaptive temporal orientations.

Recommendations for future research. Several directions for subsequent investigation emerge from this study. Longitudinal research is needed to establish temporal precedence and potential reciprocal relationships among time attitude, delayed gratification, and job satisfaction. Cross-lagged panel designs could clarify whether positive time attitudes cultivate delay capacity, whether stronger self-regulation fosters more positive

temporal orientations, or whether bidirectional relationships operate.

Comparative research across occupational contexts would clarify the boundary conditions of the present findings. Studies examining white-collar, managerial, or creative professionals might reveal different patterns of relationship, particularly regarding the relative importance of future versus present orientation. Cross-cultural research systematically comparing time attitude structures and their occupational correlates across national and cultural contexts would extend understanding of cultural variations suggested by qualitative work (Lee & Goh, 2020).

Intervention research testing the efficacy of programs targeting present-positive orientation and delayed gratification is needed. Randomized controlled trials comparing intervention groups to wait-list controls, with follow-up assessments examining sustainability of effects, would provide evidence for causal claims and practical guidance for organizations. Research examining organizational-level factors—leadership quality, reward system transparency, safety climate—as moderators of the relationships observed here would clarify contextual conditions under which psychological resources most strongly influence satisfaction.

Finally, qualitative research exploring how marine technical employees themselves experience time, make sense of delayed rewards, and construct meaning in their work would complement quantitative findings and inform intervention design. Understanding the phenomenological experience of temporal orientation in this population could reveal mechanisms not captured by standardized measures and suggest culturally appropriate intervention strategies.

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7. Tables

Table 1. Demographic Profile Distribution of the Respondents (n = 392)

Profile	Frequency	Percent(%)
Gender		
Male	378	96.43%
Female	14	3.57%
Level of education		
High school or below	18	4.59%
Associate's degree	77	19.64%
Bachelor's degree	195	49.74%
Master's degree or above	102	26.02%
Marital status		
Single	1	0.26%
Married	370	94.39%
Divorced	17	4.34%
Widowed	4	1.02%
Years of work experience		
3 years or less	92	23.47%
4–6 years	118	30.10%
7–10 years	111	28.32%
11 years or more	71	18.11%
Job level		
Technician / Engineer	251	64.03%
Senior Engineer	86	21.94%
Supervisor / Foreman	36	9.18%
Management	19	4.85%
Work type		

Regular day shift	218	55.61%
Shift work	106	27.04%
Project-based / Overseas mission-based	68	17.35%
Nationality		
Singapore	114	29.08%
Malaysia	142	36.22%
China	136	34.69%
Work location		
Singapore	105	26.79%
Malaysia	105	26.79%
China	105	26.79%
Oversea	77	19.64%
Language		
English	165	42.09%
Mandarin	146	37.24%
Other	81	20.66%

Table 2. Descriptive Statistics of Time Attitude Dimensions **(**n = 392)

Dimensions	**MD**	**Mean**	**S.D.**	**Interpretation**	**Rank**
Past Positive	19	18.122	4.286	Above median	2
Past Negative	12	12.383	4.226	Moderate	6
Present Positive	19	17.921	4.174	Above median	3
Present Negative	13	13.49	3.389	Moderate	5
Future Positive	18	17.209	4.763	Above median	4
Future Negative	12	12.865	4.875	Moderate	7
Total TA	92	91.99	6.524	High	1

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Table 3. Work Type Differences in Time Attitude, Delay of Gratification, and Job Satisfaction (Independent Samples t-test) (n=392)

Variable	Variable value	n	Mean	SD	T/P	Cohen's d
Past Positive	1.0	218	18.349	4.227	T=1.166	0.119
	2.0	174	17.839	4.354	P=0.244	
Past Negative	1.0	218	12.385	4.194	T=0.014	0.001
	2.0	174	12.379	4.277	P=0.989	
Present Positive	1.0	218	18.115	4.088	T=1.024	0.105
	2.0	174	17.678	4.278	P=0.307	
Present Negative	1.0	218	13.376	3.239	T=-0.735	0.075
	2.0	174	13.632	3.573	P=0.463	
Future Positive	1.0	218	17.381	4.837	T=0.801	0.081
	2.0	174	16.994	4.674	P=0.424	
Future Negative	1.0	218	12.661	4.815	T=-0.925	0.094
	2.0	174	13.121	4.952	P=0.355	
Total TA	1.0	218	92.266	6.323	T=0.931	0.095
	2.0	174	91.644	6.77	P=0.352	
Total DIG	1.0	218	110.463	9.398	T=2.043	0.21
	2.0	174	108.379	10.511	P=0.042**	
Total JS	1.0	218	127.353	8.53	T=0.722	0.072
	2.0	174	126.764	7.587	P=0.471	

Table 4. Multivariate analysis of variance - Past Positive

Variable	F	P-value	Int
What is your highest level of education?	1.546	0.202	NS
What is your marital status?	1.121	0.340	NS
What is your total number of years of work experience?	2.936	0.033**	S
What is your current job level?	0.465	0.707	NS
What is your current work type?	1.09	0.337	NS
What is your nationality?	1.108	0.331	NS
Where is your primary work location currently?	5.132	0.002***	S
What language do you primarily use at work?	3.86	0.022**	S

Table 5. Past Negative Analysis of ANOVA **(**n = 392)

Variable	F	P-value	Int
What is your highest level of education?	4.624	0.003***	S
What is your marital status?	1.201	0.309	NS
What is your total number of years of work experience?	0.969	0.407	NS
What is your current job level?	0.79	0.500	NS
What is your current work type?	3.027	0.050**	S
What is your nationality?	0.669	0.513	NS
Where is your primary work location currently?	5.121	0.002***	S
What language do you primarily use at work?	2.327	0.099*	S

Table 6. Present Positive multivariate analysis of variance **(**n = 392)

Variable	F	P	Int
What is your highest level of education?	2.044	0.107	NS
What is your marital status?	3.401	0.018**	S
What is your total number of years of work experience?	3.688	0.012**	S
What is your current job level?	0.819	0.484	NS
What is your current work type?	3.146	0.044**	S
What is your nationality?	0.057	0.945	NS
Where is your primary work location currently?	5.718	0.001***	S
What language do you primarily use at work?	4.088	0.018**	S

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Table 7. Present Negative multivariate analysis of variance (n = 392)

Variable	F	P	Int
What is your highest level of education?	2.831	0.038**	S
What is your marital status?	1.012	0.387	NS
What is your total number of years of work experience?	0.955	0.414	NS
What is your current job level?	1.424	0.235	NS
What is your current work type?	2.328	0.099	NS
What is your nationality?	0.73	0.483	NS
Where is your primary work location currently?	2.827	0.039**	S
What language do you primarily use at work?	0.516	0.597	NS

Table 8. Future Positive multivariate analysis of variance (n = 392)

Variable	F	P	Int
What is your highest level of education?	1.443	0.230	NS
What is your marital status?	1.469	0.223	NS
What is your total number of years of work experience?	0.898	0.442	NS
What is your current job level?	2.692	0.046**	S
What is your current work type?	2.881	0.057	NS
What is your nationality?	2.706	0.068	NS
Where is your primary work location currently?	4.896	0.002***	S
What language do you primarily use at work?	2.101	0.124	NS

Table 9. Future Negative multivariate analysis of variance (n = 392)

Variable	F	P	Int
What is your highest level of education?	1.261	0.288	NS
What is your marital status?	1.934	0.124	NS
What is your total number of years of work experience?	1.377	0.250	NS
What is your current job level?	2.706	0.045**	S
What is your current work type?	2.794	0.062	NS
What is your nationality?	0.595	0.552	NS
Where is your primary work location currently?	4.739	0.003***	S
What language do you primarily use at work?	0.781	0.459	NS

Table 10. Total TA multivariate analysis of variance **(**n = 392)

Variable	F	P	Int
What is your highest level of education?	0.039	0.990	NS
What is your marital status?	1.886	0.132	NS
What is your total number of years of work experience?	2.26	0.081	NS
What is your current job level?	0.117	0.950	NS
What is your current work type?	0.092	0.913	NS
What is your nationality?	0.219	0.804	NS
Where is your primary work location currently?	0.439	0.725	NS
What language do you primarily use at work?	4.035	0.018**	S

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Table 11. Total DIG multivariate analysis of variance (n = 392)

Variable	F	P	
What is your highest level of education?	0.986	0.399	NS
What is your marital status?	0.772	0.510	NS
What is your total number of years of work experience?	0.352	0.788	NS
What is your current job level?	0.352	0.788	NS
What is your current work type?	0.355	0.702	NS
What is your nationality?	0.424	0.655	NS
Where is your primary work location currently?	4.101	0.007***	S
What language do you primarily use at work?	0.403	0.668	NS

Table 12. Total JS multivariate analysis of variance results (n = 392)

Variable	F	P
What is your highest level of education?	1.428	0.234
What is your marital status?	0.894	0.444
What is your total number of years of work experience?	1.902	0.129
What is your current job level?	0.74	0.529
What is your current work type?	0.773	0.462
What is your nationality?	1.719	0.181
Where is your primary work location currently?	1.371	0.251
What language do you primarily use at work?	0.421	0.657

Table 13. Relationship of the Time attitude, Delayed Gratification and Job Satisfaction **(**n = 392)

	Past Positive	Past Negative	Present Positive	Present Negative	Future Positive	Future Negative	Total TA	Total DIG	Total JS
Past Positive									
Past Negative	-0.73 (0.000***)								
Present Positive	0.76 (0.000***)	-0.73 (0.000***)							
Present Negative	-0.358 (0.000***)	0.433 (0.000***)	-0.413 (0.000***)						
Future Positive	0.413 (0.000***)	-0.454 (0.000***)	0.467 (0.000***)	-0.704 (0.000***)					
Future Negative	-0.382 (0.000***)	0.444 (0.000***)	-0.411 (0.000***)	0.7 (0.000***)	-0.808 (0.000***)				
Total TA	0.501 (0.000***)	-0.073 (0.148)	0.486 (0.000***)	0.31 (0.000***)	0.037 (0.471)	0.295 (0.000***)			
Total DIG	0.254 (0.000***)	-0.22 (0.000***)	0.245 (0.000***)	-0.03 (0.557)	0.105 (0.038**)	-0.054 (0.286)	0.202 (0.000***)		
Total JS	0.103 (0.042**)	-0.101 (0.046**)	0.168 (0.001***)	-0.101 (0.046**)	0.084 (0.096*)	-0.096 (0.057*)	0.047 (0.352)	0.223 (0.000***)	
Note: ***, **, and * represent significance levels of 1%, 5%, and 10%, respectively.									

Table 14. Table of linear regression analysis results on time attitude towards delayed gratification (n=392)

	Non-standardized coefficient		Standardized coefficient	t	P	VIF	R^2	**Adj.** R^2	F
	B	SE	Beta						
Constant	89.256	7.653	-	11.663	0.000***	-	0.084	0.07	F=5.894 P=0.000***
Past Positive	0.16	0.181	0.069	0.886	0.376				
Past Negative	-0.335	0.158	-0.143	-2.129	0.034**				
Present Positive	0.104	0.19	0.044	0.55	0.583				
Present Negative	0.171	0.197	0.058	0.867	0.387				
Future Positive	0.066	0.151	0.032	0.437	0.663				
Future Negative	0.009	0.164	0.004	0.055	0.956				
Total TA	0.175	0.072	0.115	2.428	0.016**				
Dependent variable: Total DIG									
Note: ***, **, and * represent significance levels of 1%, 5%, and 10%, respectively.									

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Table 15. Table of TA and JS linear regression analysis results n=392

	Non-standardized coefficient		Standardized coefficient	T	P	VIF	R^2	**Adjusted** R^2	F
	B	SE	Beta						
Constant	124.347	6.418	-	19.374	0.000 ***	-	0.033	0.018	F=2.199 P=0.042 **
Past Positive	-0.106	0.152	-0.056	-0.696	0.487				
Past Negative	0.071	0.132	0.037	0.539	0.590				
Present Positive	0.413	0.159	0.212	2.598	0.010 ***				
Present Negative	-0.129	0.165	-0.054	-0.779	0.436				
Future Positive	-0.118	0.127	-0.069	-0.93	0.353				
Future Negative	-0.115	0.137	-0.069	-0.835	0.404				
Total TA	0.018	0.06	0.014	0.29	0.772				
Dependent variable：Total JS									
Note: ***, **, and * represent significance levels of 1%, 5%, and 10%, respectively.									

Table 16. Total DIG_Total JS Linear Regression Analysis Results Table (n=392)

	Non-standardized coefficient		Standardized coefficient	T	P	VIF	R^2	**Adj.** R^2	F
	B	SE	Beta						
Constant	107.115	4.431	-	24.174	0.000 ***	-	0.05	0.047	F=20.492 P=0.000 ***
Total DIG	0.182	0.04	0.223	4.527	0.000 ***	1			
Dependent variable: Total JS									
Note: ***, **, and * represent significance levels of 1%, 5%, and 10%, respectively.									

Table 17 Intervention Program

Intervention Program Overview Table

Component	**Description**
Program Name	Job Satisfaction Enhancement Program for Marine Technical Employees
Theoretical Basis	Present Positive Time Attitude + Delay of Gratification (DIG)
Duration	8 Weeks
Session Format	Weekly group session (20–30 min) + Daily micro-practice (3–10 min)
Target Outcomes	↑ Job Satisfaction, ↑ Present Positive, ↑ DIG, ↑ Emotional regulation, ↑ Work engagement

Weekly Intervention Plan

Week	Module	Objective	Session Activities	Daily Practice	Psychological Target
0	Orientation	Motivation & baseline assessment	Program intro, industry reflection, pre-test (PP, DIG, JS), goal card	—	Awareness & commitment
1	Present Positive	Increase awareness of progress	Trainer talk + "3-Minute Progress Reflection" training	Fill reflection card after each shift	Attention shift to achievement
2	Present Positive	Regulate stress in real time	Teach 30-sec breathing reset + control focus	Use breathing reset in high-pressure moments	Emotional self-regulation
3	Present Positive	Reinforce positive work meaning	Group sharing of repair successes & risk prevention	Note one daily accomplishment	Present-moment engagement
4	DIG	Connect work to long-term meaning	Dual Goal Card: Long-term anchor + weekly action	Complete one small goal action daily	Future-directed persistence

5	DIG	Reframe effort	Sentence exercise: "This effort is an investment toward…"	Use investment sentence during difficult tasks	Cognitive reframing
6	DIG	Strengthen self-control	Temptation management worksheet	Apply substitute/ block/reward strategy	Behavioral self-regulation
7	Integration	Apply skills under stress	High-pressure scenario simulation	Use breathing + one-step method	Skill generalization
8	Integration	Consolidate and evaluate	Maintenance plan, post-test (PP, DIG, JS)	Continue daily check-in	Long-term habit formation

Daily Micro-Practice Table

Practice	Duration	When Used	Purpose
3-Minute Progress Reflection	3 min	After shift	Increase present positive awareness
30-Second Breathing Reset	30 sec	During stress	Restore control
One-Step Focus	15 sec	When overwhelmed	Reduce cognitive overload
Long-Term Anchor Reminder	10 sec	During fatigue	Strengthen DIG
Investment Reframing Sentence	10 sec	During difficult tasks	Increase persistence

Key Mechanism Table

Psychological Mechanism	Intervention Tools	Expected Outcome
Present-moment engagement	Reflection card, achievement sharing	↑ Job satisfaction via positive affect
Emotional regulation	Breathing reset, one-step focus	↓ Stress reactivity
Meaning construction	Long-term anchor exercise	↑ Motivation
Cognitive reframing	Investment sentence	↑ Tolerance of effort
Behavioral self-control	Temptation management	↑ Delay of gratification

