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Revisiting Rebecca Oxford's Theory in a High-Stakes Professional Context: The Strategic Divergence of Air Traffic Controllers

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ABSTRACT

This study revisits Rebecca Oxford's framework of Language Learning Strategies (LLS) and Strategic Self-Regulation (S2R) through a qualitative narrative inquiry of Air Traffic Controllers (ATCs) at the Makassar Air Traffic Service Center (MATSC). In the high-stakes environment of aviation, where English proficiency is a safety-critical mandate rather than an academic pursuit, the application of LLS diverges significantly from traditional classroom settings. Through in-depth interviews with 20 controllers stratified by proficiency achievement, this research identifies a "Great Divergence" between mastery-oriented learners who employ proactive, continuous strategies, and compliance-oriented learners who rely on reactive, event-driven tactics. The findings reveal two critical paradoxes, the "Social Strategy Paradox" and the "Remedial Reward Paradox", which suggest that institutional environments can function as "anti-strategies," actively constraining the self-regulation of even highly autonomous learners. This article argues for an expansion of the S2R model to explicitly account for institutional alignment as a prerequisite for the successful deployment of social and metacognitive strategies in professional contexts.

Keywords: Language Learning Strategies (LLS), Strategic Self-Regulation (S2R), Air Traffic Control, English for Specific Purposes (ESP), Institutional Constraints.

INTRODUCTION

The standardization of English as the international language of aviation is a cornerstone of global air safety, codified by the International Civil Aviation Organization (ICAO) to prevent communication-based accidents (Fowler et al., 2021). For Air Traffic Controllers (ATCs), achieving the ICAO Operational Level 4 is not merely a credential but a fundamental licensing requirement. Consequently, the process by which these professionals acquire, maintain, and enhance their English proficiency, specifically within the domain of English for Specific Purposes (ESP) is of paramount importance (Teng, 2021) (Drayton & Coxhead, 2022).

Historically, the study of how individuals learn languages has been dominated by Rebecca Oxford's framework of Language Learning Strategies (LLS). Oxford defines strategies as conscious, teachable actions that learners take to manage their cognitive, emotional, and social processes. Her later work on the Strategic Self-Regulation (S2R) model emphasizes the "ideal learner" as one who possesses agency, autonomy, and a growth mindset, capable of monitoring and adjusting their learning journey (An et al., 2021) (Teng, 2021) (Zarrinabadi et al., 2021). However, much of the existing research on LLS and S2R remains situated in academic environments, focusing on students in formal education settings (Kehing & Yunus, 2021)(Habók et al., 2021) (Yingxin et al., 2024) (Ma et al., 2024) (Djiwandono, 2024).

There is a significant paucity of qualitative research examining how these theories function in high-stakes professional environments, where the motivation is not a grade but the preservation of life and career continuity. This study addresses that gap by situating Oxford's theories within the operational reality of the Makassar Air Traffic Service Center (MATSC). It asks a critical theoretical question: Does the S2R model hold true when the "autonomous learner" is placed in a passive or misaligned institutional culture? By analyzing the narratives of Indonesian ATCs, this article challenges the assumption that strategy selection is purely a matter of individual choice. It proposes that in professional settings, the institutional environment functions as a "meta-strategy" that can either enable or actively inhibit specific strategic categories, regardless of the learner's internal agency (Habók et al., 2021).

LITERATURE REVIEW

Oxford's evolution of strategy theory moves beyond viewing strategies as static tools to defining them as intricate, adaptable cognitive and behavioral processes. In this view, strategies are consciously chosen and orchestrated by learners to manage their cognitive, emotional, and social needs in specific contexts. Central to this framework is the concept of Self-Regulation, which refers to the learner's capacity to actively monitor, control, and adjust their learning processes. A self-regulated learner does not merely consume information but engages in metacognitive acts, such as goal setting and self-assessment, to evaluate progress and modify behaviors when obstacles arise. This regulatory capacity provides the internal structure necessary for learners to make informed decisions about which strategies to deploy, creating a feedback loop that is essential for mastering complex skills like aviation English.

Embedded within the S2R model are the twin pillars of autonomy and agency, which fundamentally shift the locus of control from the teacher to the learner. Autonomy is defined as the learner's willingness to take responsibility and initiative, transforming them from passive recipients into active owners of their learning journey. This involves not just independent study, but the capacity to make informed choices about resources and environments. Closely linked is agency, which Oxford describes as the capacity to act purposefully to influence learning outcomes. Learners with high agency are characterized by resourcefulness and the ability to navigate challenges with a sense of empowerment. Together, these elements form a synergistic triad with self-regulation, while self-regulation provides the mechanism for control, autonomy and agency provide the volition and direction required to sustain effort over time.

The effective implementation of strategies is heavily dependent on the learner's psychological state, particularly their growth mindset and self-efficacy. A growth mindset, the belief that intelligence and ability can be developed through dedication, fosters resilience by reframing setbacks as natural parts of the learning process rather than evidence of failure (Bai et al., 2025). This mindset encourages learners to view strategies as flexible tools to be experimented with, rather than rigid formulas. Complementing this is self-efficacy, the belief in one's own capability to succeed. High self-efficacy acts as a catalyst for strategy use, learners who believe they can succeed are more likely to persist through difficulties and employ complex strategies to overcome hurdles (Csizér & Albert, 2024) (Bai et al., 2025). Furthermore, resilience and hope serve as vital affective buffers. Hope is conceptualized not as wishful thinking, but as a dynamic motivational system that envisions future proficiency and fuels persistence. Resilience enables the learner to bounce back from the inevitable errors of language acquisition, viewing them as opportunities for refinement rather than reasons to quit.

To translate these theoretical constructs into observable behaviors, Oxford developed the Strategy Inventory for Language Learning (SILL), which categorizes strategies into six distinct groups. These include Cognitive Strategies for mental manipulation of the language, Memory Strategies for storing and retrieving information, and Compensation Strategies for overcoming gaps in knowledge. Crucially, the framework also emphasizes Metacognitive Strategies for planning and evaluating the learning process, Affective Strategies for managing emotions like anxiety, and Social Strategies for learning through interaction with others. This taxonomy is grounded in cognitive psychology, which elucidates mental processing, metacognition, which empowers control and sociocultural theory, which highlights the role of interaction and context. By utilizing the SILL, researchers can map the specific actions learners take to operationalize their agency and self-regulation in real-world environments.

Despite the critical role of English in aviation safety, there is a marked scarcity of studies focusing specifically on active-duty Air Traffic Controllers (ATCs), particularly within the unique socio-cultural and institutional context of Indonesia. The existing body of aviation English literature predominantly centers on student pilots or general aviation personnel in training environments. For instance, while studies provide valuable insights into the needs of cabin crew and student pilots respectively, they do not address the complex, high-stakes operational reality of controllers who manage airspace in real-time. This leaves the lived experiences and specific strategic adaptations of operational controllers significantly under-explored.

Methodologically, the field of Language Learning Strategies (LLS) is largely dominated by quantitative approaches, often employing large-scale surveys and statistical modeling to measure the frequency of strategy use. While these studies effectively identify *what* strategies are used or confirm statistical relationships between variables, they often fail to capture the nuance of *how* and *why* specific strategies are chosen, adapted, and sustained over time. Recent systematic reviews have explicitly called for more qualitative, context-specific investigations to move beyond mere metrics and uncover the human factors, such as motivation, mindset, and social dynamics that drive actual strategic behavior in professional settings (Mohammad et al., 2022).

Furthermore, the bulk of existing research is situated within academic contexts, examining student learning in classrooms or the impact of specific teacher-led interventions. Studies frequently focus on the role of teacher support, teacher emotions, or specific pedagogical tools like serious games or AI platforms. This leaves a critical gap in understanding lifelong, self-directed professional learning. Unlike students in a classroom, professionals in high-stakes environments like air traffic control must autonomously develop, adapt, and sustain their strategies over years of operational practice, independent of formal pedagogical structures. Consequently, there is a pressing need to shift the analytical lens from academic pedagogy to the complexities of professional self-regulation, exploring how experienced professionals navigate the demands of their careers without the constant scaffolding of a teacher.

METHODOLOGY

This study employed a qualitative narrative inquiry methodology to capture the "storied experiences" of ATCs, allowing for a deep exploration of the causal links between individual mindset, environmental constraints, and strategic action. This approach was deliberately chosen to move beyond a simple inventory of strategies and to uncover the underlying perceptions, motivations, and contextual factors that shape learning behaviors.

The study involved 20 active-duty ATCs from the Makassar Air Traffic Service Center (MATSC), selected through stratified purposive sampling to represent a spectrum of proficiency and success. To facilitate comparative analysis, participants were divided into two primary cohorts based on their proficiency achievement. The "More Successful" group comprised Aspiring Level 5 (ASP) and Established Level 5 (EST) controllers who consistently exceed the minimum standard. The "Less Successful" group comprised Struggling Level 4 (STR) and Stable Level 4 (STA) controllers who meet the baseline but struggle to advance or maintain it.

Tabel 1. Participant group composition

Group Category	Description	Number of Participants (n)
STR/Struggling Level 4	Controllers holding level 4 with the experience of re-check/level 3	5
STA/Stable Level 4	Controllers stable in Level 4	5
ASP/Aspiring Level 5	Controllers who newly gain level 5	5
EST/Established Level 5	Controllers who maintain level 5	5

Data was collected through semi-structured interviews designed to elicit narratives regarding learning habits, perceptions of institutional policy, and reactions to operational stress. Simultaneously, researcher observation was employed to capture non-verbal cues and contextual data. The data was analyzed using inductive thematic analysis, coding for strategy types based on Oxford's SILL and identifying emerging environmental themes. This rigorous process allowed for the identification of key strategic differentiators between the two proficiency cohorts.

RESULTS

The analysis revealed that while all controllers share a fundamental psychological readiness for learning, their actual strategic behaviors diverge sharply based on their motivation type and are heavily constrained by environmental paradoxes. Contrary to the hypothesis that lower-performing controllers might lack agency, the study found a universal foundation of high autonomy across all groups. Controllers overwhelmingly rejected the notion of "innate talent," viewing English proficiency as a skill developed through hard work. When asked about responsibility, the sentiment "I think for me personally it's my own responsibility" was ubiquitous. This confirms that the prerequisite conditions for S2R, agency and growth mindset are present throughout the workforce, aligning with recent findings on learner autonomy in modern environments (Kehing & Yunus, 2021) (Liu et al., 2023).

Despite this shared foundation, a "Great Divergence" in strategy implementation emerged between the two cohorts. The "More Successful" group employs a "continuous habit" model (Bai & Wang, 2023). Their strategies are proactive and integrated into daily life, heavily utilizing informal digital learning such as watching movies without subtitles and engaging with aviation YouTubers (An et al., 2021) (Kehing & Yunus, 2021)(Wei, 2023) (Yingxin et al., 2024) (Taherian et al., 2024) (Ma et al., 2024) (Djiwandono, 2024) (Csizér & Albert, 2024). Their motivation is aspirational, driven by pride and career progression, which leads to "resilient fluency", a competence flexible enough to handle the unexpected events central to ICAO Level 5 requirements (Zarrinabadi et al., 2021) (Habók et al., 2021) (Liu et al., 2023)(Bai & Wang, 2023) (Wang et al., 2023) (Csizér & Albert, 2024). In contrast, the "Less Successful" group employs an "event-driven" model. Their strategies are reactive, triggered almost exclusively by the recurrent IELP exam. They engage in "cramming" and rote memorization of standard phraseology. While effective for meeting the known parameters of the Level 4 test, this strategy builds a rigid, tactical proficiency that often fails during non-routine interactions (An et al., 2021) (Ali El Deen, 2023).

Furthermore, the narrative inquiry uncovered two critical environmental factors that distort the application of strategies. First, the "Social Strategy Paradox" emerged as a dominant theme. Participants universally identified "direct conversation" (Social Strategy) as the most effective learning method, yet it was the least utilized (Yingxin et al., 2024). This echoes broader findings where social strategies can be less preferred due to communicative pressures (An et al., 2021) (Kehing & Yunus, 2021) (Mohammad et al., 2022). The workplace culture was described as "supportive but passive," characterized by a pervasive fear of social judgment ("malu" or shame) and a fear of appearing arrogant if one initiated English conversation (Habók et al., 2021) (Mohammad et al., 2022) (Qin, 2022) (Zhao & Yang, 2022)(Zheng & Zhou, 2023) (Djiwandono, 2024) (Kaiqi & Kutuk, 2024) (Budzińska, 2024) (Bai et al., 2025). This creates a paradox where the most valued strategy is rendered inaccessible by the psychosocial environment (Zarrinabadi et al., 2021). Second, the "Remedial Reward Paradox" in institutional policy inadvertently incentivizes failure. Controllers who fail the IELP test are often sent to desirable out-of-town locations for remedial training with expenses covered, while proactive learners who pass immediately receive no such tangible reward. As one controller noted, "Why is the reward given after failure? It should be given before the test". This policy actively undermines the intrinsic motivation required for S2R.

DISCUSSION

The findings of this study affirm the psychological components of Oxford's S2R model, specifically the importance of agency and growth mindset but suggest that the model is incomplete when applied to high-stakes professional contexts without accounting for institutional alignment (Liu et al., 2023) (Bai & Wang, 2023). The "ideal learner" described by Oxford exists at MATSC, yet their strategic efficacy is capped by the environment (Habók et al., 2021). While Oxford's theory emphasizes the learner's internal drive, this study exposes the limits of individual autonomy within a restrictive professional ecosystem. The "Great Divergence" observed between controllers is not merely a reflection of personal choice but a symptom of an environment that fails to scaffold the transition from awareness to action. The controllers who rely on "compliance regulation" are responding rationally to a system that prioritizes minimum standards over maximum potential (Rezaee & Seyri, 2022) (Ali El Deen, 2023). This suggests that in high-stakes professions, autonomy is not a constant trait but a variable that fluctuates based on environmental support, without institutional structures that reward mastery, even autonomous learners may default to the path of least resistance, highlighting the need for organizational policies that actively nurture, rather than passively permit, self-regulated learning (Zarrinabadi et al., 2021).

This necessitates a critical re-evaluation of how the environment functions as a "meta-strategy." Oxford categorizes strategies as tools the learner chooses to employ, but this study suggests that the institutional environment dictates the availability of these choices. The "Social Strategy Paradox" demonstrates that Social Strategies are not purely individual choices, they require a "psychologically safe" ecosystem to exist. In a "passive" culture where fear of judgment prevails, the option to employ social strategies is effectively removed from the learner's toolkit, regardless of their autonomy (Rezaee & Seyri, 2022) (Kaiqi & Kutuk, 2024). A profound insight from this research is the conceptualization of this institutional inaction as an active "anti-strategy". By failing to provide regular, structured opportunities for social practice, the institution implicitly signals that such practice is not a priority (Csizér & Albert, 2024). This creates a vacuum where fear of judgment can thrive, effectively disabling the social strategies that are crucial for developing communicative competence (Shen, 2022) (Zhao & Yang, 2022) (Wang et al., 2023) (Taherian et al., 2024) (Budzińska, 2024).

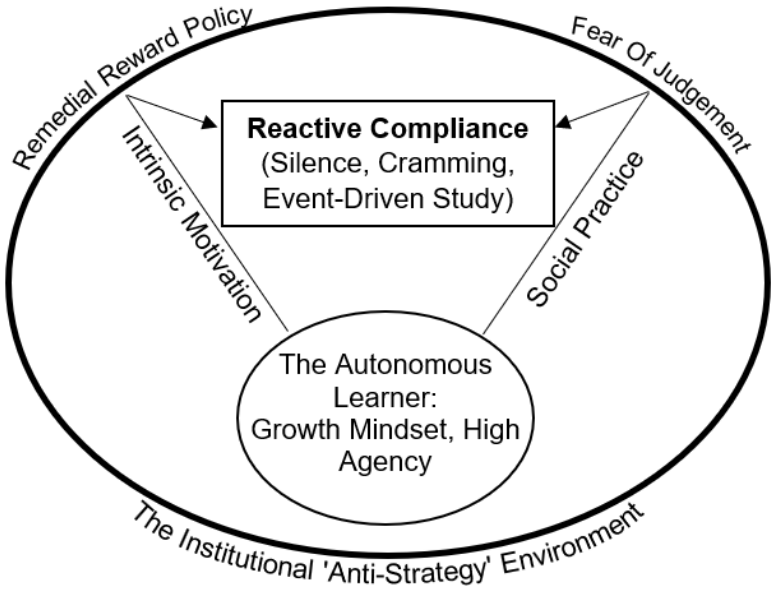

Figure 1. The Institutional Anti Strategy Mechanism

Figure 1 illustrates the structural tension between the individual controller's agency and the restrictive institutional environment. At the center of the model is the Autonomous Learner, representing the controllers at MATSC who possess a growth mindset and the internal capacity for self-regulation as defined in Oxford's (2017) S2R triad. Under ideal conditions, these learners would deploy proactive social and metacognitive strategies to achieve resilient fluency.

However, the figure identifies a thick outer ring representing the Institutional "Anti-Strategy" Environment. This ring acts as a permeable but resistant barrier that deflects proactive learning energy. When a controller attempts to utilize social strategies (the "Social Strategy Paradox"), the attempt is deflected by a pervasive fear of cultural judgment, resulting in a reactive outcome of silence and practice avoidance (Mohammad et al., 2022).

The "Social Strategy Paradox" identified at MATSC is not an isolated phenomenon but resonates with broader sociolinguistic patterns observed in collectivist and Confucian Heritage Cultures (CHC). The findings of this study, where controllers avoid direct conversation due to a fear of social judgment and appearing arrogant, find strong quantitative support in the work of Bai et al. (2025). Their research indicates that in such cultural contexts, a significant portion of language anxiety stems directly from concerns about receiving negative judgment from group members.

This suggests that the "reluctance to interact" observed in Indonesian ATCs is a rational response to an environment where peer hierarchy and social harmony are prioritized. Furthermore, Bai et al. (2025) demonstrate that self-perceived proficiency, how a learner views their own skill, is a much stronger driver of motivational beliefs than actual test scores. This validates the argument that the "Great Divergence" at MATSC is fundamentally psychological, when the institutional environment fails to provide a social shield or a psychologically safe space for practice, even high-proficiency controllers may default to silence to avoid potential social friction.

Similarly, the drive for intrinsic mastery is intercepted by the Remedial Reward Paradox. Instead of reinforcing proactive effort, the institutional policy logic redirects the learner toward "Event-Driven Cramming." In this mechanism, the environment does not merely fail to support the learner, it actively functions as an anti-strategy by incentivizing the path of least resistance, compliance, over the path of professional excellence. Consequently, the learner's agency is not lost, but it is structurally diverted away from mastery and toward a fragile, test-oriented tactical proficiency.

The cultural dimension of the 'Social Strategy Paradox' warrants specific theoretical attention. The study reveals that the inhibitor to social practice is not merely linguistic anxiety, but a complex social regulator where speaking English is perceived as a disruption of peer hierarchy, specifically the fear of appearing arrogant or 'showing off'. This phenomenon essentially weaponizes the social environment against the learner. In such a context, a learner's social agency, their willingness to initiate interaction is suppressed by the need for social conformity. This implies that for Strategic Self-Regulation (S2R) to function in collectivist professional cultures, institutional mandates are not just policy tools but necessary 'social shields' that validate practice and protect the individual learner from peer judgment.

Furthermore, the environmental restriction on social practice creates a specific proficiency imbalance termed the 'receptive-productive lag.' While controllers successfully employ cognitive strategies to consume English media

(digital learning), the lack of interactive 'speaking partners' means they develop strong listening comprehension but lack the automaticity required for spontaneous speech. This disconnect challenges the S2R model's assumption that resourcefulness alone can bridge skill gaps; without an environment that necessitates and supports verbal output, self-regulated input strategies result in incomplete mastery. This leaves controllers in a precarious position where they may fully understand a non-routine situation but struggle to articulate a safety-critical instruction with sufficient speed and clarity.

Furthermore, the S2R model posits goal-setting as a cornerstone of regulation, but this study distinguishes between two fundamentally different types of self-regulation that lead to divergent outcomes. "Compliance-Driven Self-Regulation" is driven by extrinsic threats like the loss of a license, resulting in tactical, short-term strategies like cramming.

This reactive orientation manifests behaviorally in a 'cram-and-coast' learning cycle, which fundamentally alters the nature of the proficiency acquired. Unlike the steady accretion of skills seen in mastery-oriented learners, compliance-oriented controllers engage in high-intensity, short-duration study bursts immediately preceding recertification. Theoretical models of self-regulation must account for this 'temporal distortion' of effort. While these bursts are sufficient to pass a standardized test, they fail to encode language into long-term memory, resulting in a rapid decay of proficiency post-assessment. This suggests that in high-stakes professional environments, the *timing* of regulation is just as critical as the *presence* of regulation, and institutional schedules that space assessments too far apart may inadvertently reinforce this instability.

Conversely, "Mastery-Driven Self-Regulation" is driven by intrinsic aspiration, resulting in continuous, habit-based strategies. The "Less Successful" controllers are not failing to self-regulate; they are regulating efficiently toward the wrong goal (Teng, 2021) (Qin, 2022). The findings also challenge traditional views on motivation in language learning by highlighting the unique role of high-stakes consequences in shaping these regulatory orientations. In academic settings, motivation is often linked to grades or personal interest, but for ATCs, the primary driver for strategic change is often the tangible impact on career progression and operational safety. The study reveals that when English proficiency is directly linked to promotions or desirable assignments, it transforms abstract goals into concrete necessities. This indicates that in professional contexts, "high-stakes motivation" can be a potent catalyst for shifting learners from reactive compliance to proactive mastery.

Perhaps the most critical theoretical contribution is the identification of institutional policy as a potential "anti-strategy". The "Remedial Reward Paradox" illustrates how a well-intentioned policy can actively dismantle the affective strategies of the learner (Shen, 2022). By rewarding failure, the institution signals that proactive effort is "expensive" in time and energy, while reactive failure is "rewarded" with training perks. Finally, the study illuminates a critical gap in the metacognitive cycle of many controllers: the disconnect between self-monitoring and strategic planning. While most controllers demonstrate a high capacity for self-awareness, recognizing their linguistic limitations, this awareness often fails to translate into concrete planning for improvement, a critical component of successful language learning (Kehing & Yunus, 2021). The "Reactive Planners" and "Spontaneous Learners" identified in the study illustrate a failure not of intent, but of execution. This aligns with the "Self-Regulation Gap" observed in the study, where high monitoring fails to translate into planning because the external environment provides triggers for compliance but not for mastery (Teng, 2021).

CONCLUSION

This study set out to revisit Rebecca Oxford's Strategic Self-Regulation (S2R) model within the high-stakes, safety-critical context of aviation. The findings confirm that while Oxford's internal constructs of agency and autonomy are present among Indonesian Air Traffic Controllers, the current S2R framework is insufficient to explain strategic behavior in professional environments where institutional culture functions as an opposing force (Zarrinabadi et al., 2021).

The "Great Divergence" observed between mastery-oriented and compliance-oriented controllers demonstrates that individual agency alone cannot overcome an environment that acts as an "anti-strategy." Consequently, this research argues for a theoretical expansion of Oxford's model: in professional contexts, Institutional Alignment must be viewed not merely as a background variable, but as a foundational prerequisite for self-regulation. Without a "psychologically safe" ecosystem to neutralize the fear of judgment (Social Strategy Paradox) and policy incentives that align with mastery rather than remediation (Remedial Reward Paradox), the learner's internal capacity for regulation is structurally deflected toward reactive compliance.

To operationalize this expanded view, aviation institutions must transition from a passive role to one of "Active Cultural Engineering" (Rezaee & Seyri, 2022) (Shen, 2022) (Qin, 2022) (Zhao & Yang, 2022)(Wei, 2023) (Ali El Deen, 2023) (Taherian et al., 2024) (Ma et al., 2024) (Budzińska, 2024). This involves abolishing the "Remedial Reward" system and implementing non-negotiable English policies that remove the social burden of initiation from the individual (Zheng & Zhou, 2023) (Kaiqi & Kutuk, 2024). By realigning the institutional environment to

support, rather than obstruct, the principles of Strategic Self-Regulation, aviation bodies can finally unleash the latent potential of their workforce—transforming compliance into mastery and ensuring the safety of the global airspace.

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