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Factors shaping language learning adversity quotient: the impact of family, self-influence, and educational environment

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ABSTRACT

This study explores the factors shaping the language learning adversity quotient (LLAQ) and examines the interplay between family influence, self-influence, and educational environment influence in fostering resilience in language learning. The research addresses a gap in the existing literature by investigating the factors that are associated with students' resilience in language learning. A cross-sectional survey was administered to 434 undergraduate students from a university in Vietnam, utilizing a structured questionnaire to assess the impact of these influences. The findings highlight that family influence plays a pivotal role in nurturing resilience, while self-influence is critical in sustaining students' persistence. Although educational environment influence received a lower rating, it was found to have a significant correlation with self-influence, suggesting an indirect contribution to LLAQ. The study underscores the importance of enhancing familial support and fostering students' self-agency. Moreover, it suggests that cultivating a supportive educational environment can indirectly bolster resilience by empowering students to take greater responsibility for their learning. The study concludes by advocating for a holistic approach that integrates support from family, personal agency, and institutional structures to strengthen students' perseverance in language learning.

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1. INTRODUCTION

Language learning is a complex process influenced not only by cognitive and linguistic abilities but also by psychological and emotional resilience [1]. As global communication becomes increasingly vital, learners face numerous challenges, including linguistic difficulties, cultural adaptation, academic pressure, and more recently, the demands of online learning environments post-pandemic [1]. The rapid transition to digital platforms has introduced unique forms of adversity, requiring learners to develop robust coping strategies and adaptability [2]. While some students successfully overcome these obstacles through self-motivation and support systems, others struggle, resulting in disparities in language proficiency and persistence. Understanding the mechanisms that enable students to handle adversity in language learning is therefore essential for designing effective interventions [3].

Adversity quotient (AQ), introduced by Stoltz [3], provides a theoretical framework for assessing individuals' capacity to cope with setbacks, build resilience, and persist in challenging situations. Within language education, AQ determines how learners navigate difficulties, manage frustration, and sustain motivation [3], with recent studies highlighting its critical role in maintaining engagement amidst linguistic complexity and cultural adjustment [2], [4]–[7]. Research identifies three core influences on students' AQ:

family, self, and the educational environment. Family support fosters learning attitudes, motivation, resilience, and perseverance [8], [9]. Self-influence, including self-efficacy, goal orientation, and learning strategies, directly shapes students' responses to challenges [10], [11]. Meanwhile, the educational environment—comprising teacher guidance, institutional resources, and peer support—significantly impacts learners' capacity to overcome difficulties [12], [13].

The strength of these influences may vary across cultural contexts. In collectivist societies such as Vietnam, China, and South Korea, family support often exerts a stronger impact on learning outcomes compared to individualist settings [14]–[18]. Policy initiatives in China, such as the "double reduction" policy, aim to reduce academic stress and foster student wellbeing [19], while Japan and Taiwan emphasize holistic education and socio-emotional learning to balance academic performance with psychological health [20], [21]. Despite shared cultural values emphasizing group harmony, differences in educational systems and social structures can alter how self- and environment-based factors are perceived and utilized, underscoring the need for cross-cultural examination of AQ development.

Despite recognition of these factors, prior research remains fragmented. Studies frequently examine family, self, or educational environment in isolation, drawing on ecological systems theory [22]–[24], self-determination theory [25], or the role of social interaction and scaffolding in cognitive development [26]–[28]. Few studies employ longitudinal designs or model the interactions among these factors [29], resulting in limited empirical evidence linking AQ with specific internal and external influences in a cohesive framework [3], [12], [30].

This study aims to investigate the factors influencing language learning adversity quotient (LLAQ), focusing on quantifying the contributions of family, self, and educational environment. In addition to measuring these contributions, the study explores the mechanisms connecting these factors, providing a comprehensive framework to guide future research. Findings are expected to inform pedagogical strategies and institutional policies designed to enhance student resilience and success in language learning. To achieve these aims, the study delves into the two following research questions:

i) To what extent are family influence, self-influence, and educational environment associated with students' LLAQ?
ii) What are the interrelationships among family influence, self-influence, and educational environment in shaping students' LLAQ?

2. METHOD

2.1. Research design

This study adopts a cross-sectional descriptive and correlational research design to examine the relationships between AQ, family influence, self-influence, and the educational environment among English-major university students in Vietnam. This approach allows for the identification of associations between variables at a single point in time without manipulating any conditions [31].

2.2. Sampling and participants

This study was conducted at a Vietnamese university and focused on full-time undergraduate students majoring in English. Among approximately 1,100 eligible students, 900 students were invited to participate. A total of 434 valid responses were collected, yielding a response rate of 48.2%. This rate surpassed the 30% minimum recommended for correlational studies in the social sciences. Stratified convenience sampling was used to ensure proportional representation across academic years, based on official enrollment data from the school of foreign languages. The participants varied in gender, academic year, and major, as detailed in Table 1.

All participants met the following criteria: i) full-time enrollment in an English-major program; ii) proficiency in Vietnamese; and iii) voluntary participation. The study adhered to Can Tho University's ethical guidelines. Participants were informed of the study's purpose, their right to withdraw, and confidentiality of responses. Informed consent was obtained, and no personal identifiers were collected, ensuring anonymity and data protection. The gender distribution reflects broader trends in language and social sciences, where female students typically outnumber males. At the institution, male students represent roughly one-third of the female population. The final sample included 112 males (25.8%) and 322 females (74.2%), consistent with national and international patterns [32], [33]. Although gender was uneven, it was included as a control variable in regression analyses to account for potential confounding effects. Other potential confounders, such as socioeconomic status or prior academic performance, were not controlled due to data limitations. Demographic comparisons revealed no significant differences across academic year or major ($p>0.05$), indicating minimal non-response bias and supporting sample representativeness.

Table 1. Participant demographics and AQ distribution

Category	Subcategory	Number (n)	Percentage (%)
Gender	Male	112	25.8
	Female	322	74.2
Academic year	Freshmen (year 1)	82	18.9
	Sophomores (year 2)	142	32.7
	Juniors (year 3)	112	25.8
	Seniors (year 4)	98	22.6
Major	Teacher education	57	13.1
	English studies	332	76.5
	English translation & interpretation	45	10.4
AQ level	Very low (≤59)	0	0.0
	Low (60–94)	0	0.0
	Rather medium (95–134)	122	28.1
	Medium (135–165)	236	54.4
	High (166–200)	76	17.5
Total participants		434	100*

Note: *percentages are based on respondents with valid responses (study participants).

2.3. Instrument

The study employed a survey questionnaire as the primary data collection tool, widely recognized in language learning research for efficiently capturing large-scale data and learners' perceptions [34], [35]. The questionnaire included 33 items across three sections: i) personal information (gender, academic year, major); ii) AQ Scale, measuring students' AQ based on Stoltz's framework [3], [29], [36]; and iii) factors affecting AQ, examining family-related, personal, and learning environment influences [37]. The AQ scale was adapted to the Vietnamese context, with expert review to ensure cultural appropriateness and minimize bias.

Stoltz's AQ scale was selected for its established reliability and validity in assessing resilience in educational settings [3], [35], [36]. While it does not capture all aspects of resilience (e.g., emotional regulation, social support), it provides insights into learners' capacity to cope with challenges in language learning [37], [38] and allows for cross-study comparisons. To ensure validity, the instrument underwent a multi-step process: expert validation by specialists in educational psychology and language learning, forward-backward translation by bilingual experts, and a pilot test with 30 students to refine clarity and wording. Content validation confirmed alignment with theoretical constructs. The final questionnaire demonstrated high internal consistency (Cronbach's α=0.82) [34], [35] and was deemed suitable for full-scale data collection.

2.4. Data collection procedure

Data were collected via paper-based and online questionnaires administered during scheduled class sessions between July and November 2024. For the online component, the survey was distributed using Google Forms. Each participant completed the survey in a single session, which on average took approximately 20–25 minutes. Participants were informed verbally and in writing before completing the survey. No incentives were provided for participation, aligning with institutional ethical guidelines.

2.5. Data analysis

The collected data were analyzed using quantitative statistical methods to examine the relationships between AQ levels and influencing factors. Data analysis was conducted using SPSS 26.0, ensuring robust statistical interpretation. Descriptive statistics were used to summarize participants' AQ scores and demographic information, including means, standard deviations, and frequency distributions. To categorize AQ levels, the study followed Stoltz's framework [36] classification system, which divides AQ scores into five levels: very low (≤59), low (60–94), rather medium (95–134), medium (135–165), and high (166–200).

For section 3 of the questionnaire, the measurement instrument employed a five-point Likert scale to assess participants' perceptions across questionnaire items, with response anchors ranging from 1 (strongly disagree) to 5 (strongly agree). This design aligns with commonly accepted psychometric practices, as the five-point format balances measurement sensitivity with respondent clarity [39]. Table 2 shows the qualitative interpretation used in this study.

Spearman's rank-order correlation was conducted to determine the relationships between family-related factors, personal factors, and learning environment factors with students' AQ, as it is suitable for analyzing associations between ordinal and non-normally distributed data [31]. Effect sizes (R^2) and 95% confidence intervals were reported alongside p-values to assess the statistical and practical significance of the results. All effect sizes (R^2 for regression models and r for correlations) were interpreted following

Cohen's guidelines, and 95% confidence intervals were computed to provide precision estimates around the observed statistics. Gender was included as a control variable in the regression models to account for potential sampling bias. Additionally, exploratory post hoc analyses were conducted to assess whether key relationships varied by gender or academic year using interaction terms and stratified analyses.

Table 2. Qualitative interpretation of 5-point Likert scale measurements

Likert-scale description	Likert scale point	Likert scale interval
Strongly disagree	1	1.00–1.80
Disagree	2	1.81–2.60
Neutral/uncertain	3	2.61–3.40
Agree	4	3.41–4.20
Strongly agree	5	4.21–5.00

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Factors affecting students' language learning adversity quotient

The study examined three primary factors affecting students' AQ: family influence, self-influence, and educational environment influence. The descriptive statistics for these factors are summarized in Table 3. The results indicate that family influence plays a significant role in students' AQ development, with a mean score of 4.10 (SD=0.54). This is the highest among the three factors, suggesting that students generally perceive their families as a strong source of support in overcoming adversity. Additionally, the relatively low standard deviation (0.54) indicates that responses are consistent, meaning most students agree on the importance of family in shaping their resilience. The scores range from 2.75 to 5.00, with no extremely low ratings, further reinforcing the idea that family is a stable and widely acknowledged influence on AQ.

Table 3. Descriptive statistics of factors influencing LLAQ

Main factor	Sub-factor item	N	Min	Max	Mean	SE	SD
Family influence	Overall mean	434	1.00	5.00	4.10		0.54
	Parental care influences the ability to overcome challenges	434	1.00	5.00	4.28	0.044	0.93
	Family background and financial situation affect perseverance	434	1.00	5.00	4.11	0.041	0.85
	Siblings and relatives influence the ability to overcome difficulties	434	1.00	5.00	4.07	0.050	1.00
	General family support helps overcome academic difficulties	434	1.00	5.00	3.93	0.046	0.96
Self-influence	Overall mean	434	1.00	5.00	4.07		0.64
	Goal-setting skills	434	1.00	5.00	3.96	0.044	0.92
	Problem-solving skills	434	1.00	5.00	4.02	0.043	0.90
	Self-confidence in overcoming challenges	434	1.00	5.00	4.03	0.043	0.89
	Having clear academic goals	434	1.00	5.00	4.18	0.039	0.81
	Maintaining a healthy lifestyle	434	1.00	5.00	4.19	0.042	0.88
	Time management skills	434	1.00	5.00	4.24	0.041	0.85
Education environment	Overall mean	434	1.00	5.00	3.98		0.68
	Participation in extracurricular activities	434	1.00	5.00	3.53	0.051	1.07
	Lecturer attention and feedback	434	1.00	5.00	4.08	0.042	0.88
	Encouragement from peers and colleagues	434	1.00	5.00	4.08	0.044	0.92

The analysis also highlights the importance of self-influence, with a mean score of 4.07 (SD=0.64). However, the standard deviation is higher (0.64) compared to family influence, indicating more variation in students' perceptions. Among the three factors, education environment influence received the lowest mean score (3.98, SD=0.68), indicating that students perceive the role of their academic environment as less significant compared to family and self. The higher standard deviation (0.68) suggests that students have diverse experiences with their educational settings, with some finding strong institutional support while others may feel inadequately supported.

Within family support, parental care emerged as the most highly rated sub-factor (M=4.28, SD=0.93), underscoring its strong perceived role in helping students overcome academic challenges. Family background and financial situation (M=4.11, SD=0.85), as well as the influence of siblings and relatives (M=4.07, SD=1.00), were also rated highly, although the greater variability in responses for siblings/relatives suggests differences in how students experience this type of support. General family support (M=3.93, SD=0.96) received the lowest score within the family domain but still reflected a positive perception.

In the self-influence category, time management skills received the highest mean rating (M=4.24, SD=0.85), highlighting its crucial role in academic perseverance. This was followed closely by maintaining a healthy lifestyle (M=4.19, SD=0.88) and having clear academic goals (M=4.18, SD=0.81), suggesting the

importance of structured habits and personal motivation. Self-confidence in overcoming challenges (M=4.03, SD=0.89) and problem-solving skills (M=4.02, SD=0.90) were also notable contributors, reflecting the value of both emotional resilience and cognitive abilities. Interestingly, goal-setting skills received a slightly lower mean score (M=3.96, SD=0.92), yet still indicated a positive influence on students' LLAQ.

Regarding the educational environment, peer and colleague encouragement (M=4.08, SD=0.92) and lecturer attention and feedback (M=4.08, SD=0.88) were rated equally, highlighting the importance of both social and instructional support networks. Participation in extracurricular activities received the lowest mean score across all sub-factors (M=3.53, SD=1.07), suggesting that while some students recognize its contribution to resilience, others may not experience the same level of benefit, as reflected in the relatively high standard deviation.

Overall, the combined descriptive statistics suggest that students' perceptions of resilience in language learning are shaped by an interplay of family, personal, and educational factors, with personal time management, parental care, and social-instructional support emerging as particularly influential. To explore whether perceptions of key factors influencing AQ differ by gender, an independent samples t-test was performed. The analysis focused on three dimensions: family influence, personal attributes, and the educational environment. The results revealed that there were no statistically significant differences between male and female students for any of the three factors. For the family support factor, Levene's test indicated equal variances ($p=0.75$), and the t-test showed no significant gender difference, $t(433)=-1.56$, $p=0.12$. Regarding the self-influence factor, the assumption of equal variances was met ($p=0.96$), and the difference between genders was also not significant, $t(433)=-0.13$, $p=0.90$. Similarly, for the educational environment factor, Levene's test was non-significant ($p=0.37$), and no gender difference was found, $t(433)=1.02$, $p=0.31$.

These findings indicate that gender does not significantly influence students' perceptions of the impact of family, self-influence, or learning environment on their AQ. Therefore, the effects of these factors on AQ appear to be consistent across both male and female students. Table 4 shows the independent samples t-test results comparing gender differences on factors affecting AQ.

Table 4. Independent samples t-test results comparing gender differences on factors affecting AQ

Factor	Levene's test Sig.	t	df	Sig. (2-tailed)	Mean difference	95% CI of the difference
Family influence	0.75	-1.56	433	0.12	-0.09	[-0.21,0.02]
Self-influence	0.96	-0.13	433	0.90	-0.01	[-0.15,0.13]
Educational environment influence	0.37	1.02	433	0.31	0.08	[-0.07,0.24]

3.1.2. The correlation between the three factors

The Spearman's rho correlation analysis as in Table 5 reveals statistically significant relationships among the three key factors influencing AQ: family influence, educational environment influence, and self-influence. Notably, a strong positive correlation was observed between educational environment influence and self-influence ($r=0.68$, $p<0.01$), indicating that students perceiving a more supportive educational environment tend to demonstrate higher self-regulatory capacity and resilience. According to Evans [38], this correlation qualifies as "strong," highlighting the educational environment's critical role in fostering students' internal coping mechanisms.

Table 5. Correlations between AQ influencing factors

	AQ influencing factors		Family	Educational	Self-influence
Spearman's rho	Family	Correlation coefficient	1.00	0.19**	0.15**
		Sig. (2-tailed)	.	0.000	0.00
		N	434	434	434
	Educational	Correlation coefficient	0.19**	1.00	0.68**
		Sig. (2-tailed)	0.00	.	0.00
		N	434	434	434
	Self-influence	Correlation coefficient	0.15**	0.68**	1.00
		Sig. (2-tailed)	0.00	0.00	.
		N	434	434	434

Note: $p<0.01$; **statistical significance at $p < .01$ (2-tailed)

In contrast, family influence exhibited weaker but significant correlations with both educational environment influence ($r=0.19$, $p<0.01$) and self-influence ($r=0.15$, $p<0.01$). These small effect sizes suggest that while family support is associated with AQ, its direct impact is comparatively limited relative to

institutional support structures [40]. This pattern underscores the potential prioritization of school-based interventions over family-based ones in efforts to enhance students' AQ. Table 5 shows the correlations between the three mentioned factors. The low standard deviations across these measures further imply consistent perceptions of these influences among the student cohort, though subgroup variations (e.g., by gender or academic year) remain unexplored in this analysis.

3.2. Discussion

3.2.1. Factors affecting students' language learning adversity quotient

This study examined the factors associated with LLAQ, focusing on family influence, self-influence, and educational environment. The findings indicate associations rather than causal effects. Family influence showed the strongest correlation with AQ, with students perceiving their families as a key source of emotional and motivational support, aligning with prior research linking parental encouragement to resilience and perseverance [9], [41]. Family support is also associated with reduced stress and enhanced psychological well-being, contributing to higher AQ [41]. However, the correlation between family and self-influence was relatively weak (r=0.149), suggesting a limited direct effect on self-regulation and adaptability.

In Vietnam, familial support is particularly central to students' academic journeys, providing emotional and financial stability [33], [42], [43]. This reflects collectivist cultural values emphasizing interdependence, which may amplify perceptions of family support in resilience development [44]–[48]. These findings suggest that some resilience theories, including Stoltz's AQ framework, may need cultural adaptation to fully capture collective coping strategies in non-Western contexts.

Self-influence also emerged as a critical factor. Although its mean score was slightly lower than family influence, results indicate that students recognize the importance of personal agency in overcoming challenges. Higher variability in self-influence scores suggests differences in problem-solving skills, motivation, and self-regulation among students. These observations align with Stoltz's AQ theory [3], Dweck's growth mindset [11], [36], and Bandura's self-efficacy theory [49]–[51], all highlighting the role of adaptability, persistence, and self-belief in resilience.

Educational environment influence received the lowest mean score, though a high standard deviation (0.68) indicates diverse student experiences. While some students benefit from mentorship, structured guidance, and institutional resources [46], [49], [52], [53], others perceive limited support. Research suggests that institutional support fosters resilience primarily by complementing family support and personal strategies [54]–[56]. In Vietnam, traditional teacher-centered methods may further limit the impact of educational environment on AQ development [46], [57], [58]. An independent samples t-test revealed no significant gender differences across the three factors, supporting the robustness of the findings and indicating that the observed patterns likely reflect broader student trends.

3.2.2. The correlation between the three factors

Beyond individual factors, this study examined the relationships among family influence, self-influence, and the educational environment to understand their interconnected roles in shaping students' AQ in language learning. Educational environment influence significantly correlates with self-influence, suggesting that students who perceive strong academic support are more likely to develop self-motivation and effective coping strategies. This aligns with prior research emphasizing structured mentorship and institutional resources in enhancing student resilience [3], [57] and fostering personal agency and perseverance [58]–[60].

In contrast, family influence, while rated as the strongest factor, shows only weak associations with self-influence and educational environment. This indicates that families primarily provide emotional and motivational support, with a less direct impact on students' active self-regulation and adaptability [3], [5], [32]. External academic experiences and personal agency appear more influential in developing self-resilience [24], [61], [62]. Unmeasured confounders, such as socioeconomic status, prior academic performance, or language proficiency, may limit the robustness of these estimates. This pattern reflects the Vietnamese educational and cultural context, where families traditionally provide emotional encouragement and practical resources, while academic guidance is largely the responsibility of schools and teachers [25], [34]. Understanding this culturally shaped division is crucial for interpreting how different sources of support interact to foster students' AQ [25], [29], [62], [63].

Although Stoltz's AQ framework was originally developed in an individualistic context [3], [43], [46], its core components—control, ownership, reach, and endurance—remain conceptually robust [29], [37], [64]. In collectivist settings like Vietnam, students often combine personal agency with support from family, peers, and groups to cope with challenges [29], [37]. Recent adaptations, such as the re-development of the adversity response profile for Chinese students, show that cultural values significantly shape engagement with AQ constructs [64]. The present findings indicate that Vietnamese students similarly

integrate personal and collective strategies, demonstrating that the AQ framework, when applied with cultural sensitivity, remains a valuable tool for understanding student resilience [29], [46], [47].

3.3. Theoretical and practical implications

From a theoretical perspective, this study extends Stoltz's AQ framework [3] by distinguishing the contributions of external (family, educational environment) and internal (self-influence) factors to AQ development. The findings reinforce Dweck's growth mindset theory [11] and Bandura's self-efficacy theory [49], highlighting the role of students' beliefs in their capabilities in overcoming adversity. The study also provides empirical support for resilience research in language learning, emphasizing the interconnected roles of social and psychological factors in academic perseverance.

Practically, the findings suggest that educators and policymakers should adopt an integrated approach to fostering resilience. Family support remains foundational, but schools and institutions can enhance AQ through structured mentorship, growth-oriented classroom environments, and curricula incorporating problem-solving and self-regulation skills. Targeted interventions, such as motivational coaching, may particularly benefit students with lower self-influence scores. Proposed strategies should be rigorously tested through experimental designs to ensure effectiveness. Policymakers are encouraged to implement holistic programs that combine academic guidance with emotional and motivational support, integrating self-regulation and growth mindset development to equip students with the skills to overcome adversity.

3.4. Suggestions for future research

Future research should deepen understanding of AQ development by incorporating qualitative methods, such as in-depth interviews, to capture nuanced student experiences [65]. Experimental and longitudinal studies are recommended to explore causal relationships and assess long-term effects of family, self, and educational environment influences [66]. Investigating the cultural dimensions of AQ, particularly in the Vietnamese context, is crucial given the interplay between family and institutional support shaped by collectivist values [67]. Future studies should also address limitations of the current research, including gender imbalance and lack of socioeconomic data, to improve generalizability. Research could examine how cultural norms influence perceptions of support and resilience across educational systems.

Additionally, evaluating the effectiveness of tailored interventions, such as self-regulation or motivational programs for students with lower self-influence scores, is important [68]–[70]. Expanding studies across diverse cultural and educational settings will further enhance applicability [71]. By refining methodologies and broadening research contexts, future research can inform how educators and policymakers better support student resilience for both academic and personal growth.

4. CONCLUSION

This study examined key factors influencing LLAQ, focusing on family influence, self-influence, and educational environment influence. Family influence emerged as the most significant, providing emotional and motivational support essential for resilience. Self-influence was also critical, reflecting students' perceptions of personal agency in overcoming challenges. Although educational environment influence received the lowest rating, its correlation with self-influence suggests an indirect but important role in fostering self-resilience. These findings highlight the interconnected nature of these factors, with family as the foundation, self-influence driving growth, and the educational environment facilitating resilience development.

The study has several limitations: reliance on self-reported data, context-specific sampling, gender imbalance, and lack of control for confounders such as socioeconomic status and prior academic performance. The correlational design precludes causal inference. Future research could employ qualitative methods, longitudinal or experimental designs, and confirmatory factor analysis (CFA) to validate the adapted AQ scale, explore causal relationships, and examine AQ development over time. Expanding research to diverse educational and cultural contexts will enhance generalizability and provide insights into how educators can effectively support student resilience.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
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D : **D**ata Curation
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E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author, [NTTL], upon reasonable request.

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