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Perceived responsibility classroom climate in Physical Education through the perspective of Responsibility-Based Education preventing cognitive failures

Clima de responsabilidad percibido en el aula de Educación Física desde la perspectiva de la Educación Basada en la Responsabilidad, previniendo el olvido, la distracción y las conductas desencadenantes falsas

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Abstract
In recent years, the role of perceived responsibility in classroom climates has gained attention due to its potential impact on students' cognitive performance. This study examined how a Responsibility-Based educational framework influenced cognitive failures—such as forgetfulness, distractibility, and false triggering—among undergraduate students in Physical Education classes at a State University in the Philippines. A sample of 617 students was used, and multiple regression analysis was performed to explore the relationship between the perceived responsibility classroom climate shaped by students and instructors and various cognitive failures. The results revealed that overall cognitive failures were significantly influenced by the perceived responsible classroom climate generated by both students and instructors. Notably, the perceived responsibility classroom climate generated by students significantly influenced forgetfulness, while the climate generated by students and instructors directly affected false triggering. Although the overall classroom climate did not influence distractibility, an independent analysis showed that the perceived responsibility climate generated solely by instructors predicted distractibility. These findings suggested that fostering a culture of accountability and support in educational environments could enhance students' organizational skills and stress management, ultimately reducing cognitive failures. This study presented a vital advancement to educational scholarship by emphasizing the intricate link between responsibility in classroom settings and cognitive outcomes, particularly in Physical Education environments. The implications of these findings for educational practices, along with the study's recommendations and limitations, were discussed in detail.

Keywords: physical education, cognitive failures, responsibility-based education, responsible classroom climate.

Resumen
En los últimos años, el papel de la responsabilidad percibida en los climas de clase ha ganado atención debido a su impacto potencial en el desempeño cognitivo de los estudiantes. Este estudio examinó cómo un marco educativo basado en la responsabilidad influyó en los fallos cognitivos, como el olvido, la distracción y la activación falsa, entre estudiantes universitarios en clases de Educación Física en una Universidad Estatal de Filipinas. Se utilizó una muestra de 617 estudiantes y se realizó un análisis de regresión múltiple para explorar la relación entre el clima de clase de responsabilidad percibida moldeado por estudiantes e instructores y varios fallos cognitivos. Los resultados revelaron que los fallos cognitivos generales fueron significativamente influenciados por el clima de clase de responsabilidad percibida generado tanto por estudiantes como por instructores. En particular, el clima de clase de responsabilidad percibida generado por los estudiantes influyó significativamente en el olvido, mientras que el clima generado por estudiantes e instructores afectó directamente la activación falsa. Aunque el clima general del aula no influyó en la distracción, un análisis independiente mostró que el clima de responsabilidad percibida generado únicamente por los instructores predijo la distracción. Estos hallazgos sugirieron que fomentar una cultura de responsabilidad y apoyo en los entornos

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educativos podría mejorar las habilidades organizativas y la gestión del estrés de los estudiantes, reduciendo en última instancia los fallos cognitivos. Este estudio representó un avance vital para la investigación educativa al destacar el intrincado vínculo entre la responsabilidad en el aula y los resultados cognitivos, en particular en los entornos de Educación Física. Se analizaron en detalle las implicaciones de estos hallazgos para las prácticas educativas, junto con las recomendaciones y limitaciones del estudio.

Palabras clave: Educación física, fallas cognitivas, educación basada en la responsabilidad, clima de aula responsable.

Introduction

Responsibility in a responsible classroom climate is often defined as the accountability of both teachers and students to create a conducive learning environment (Fernández-Río et al., 2019). It involves teachers fostering a climate that encourages student responsibility and engagement, which is key to maintaining positive interactions and ensuring effective learning outcomes (Lewis, 2001). Additionally, responsibility in students is linked to maturity and independence, involving elements like self-regulation and personal accountability for their actions (Wray-Lake & Syvertsen, 2011). Programs that focus on social responsibility and motivation within classrooms have been shown to enhance student behavior, satisfaction, and the overall classroom climate (Valero-Valenzuela et al., 2020), while educators emphasize that responsibility should encompass attitudes, values, and accountability beyond rule-following (Parker & Hellison, 2001).

The presence of influential adults in the academic community, specifically the fitness and sports instructors, responsible classroom climate, refers to the set of behaviors, attitudes, and teaching strategies employed by educators to cultivate a setting where students perceive themselves as responsible for their learning (Fernández-Río et al., 2019). This involves enabling students to select their own learning tasks or duties, providing constructive feedback that motivates students to contemplate and assume control of their academic growth, and developing a classroom environment that supports and acknowledges students' active engagement in their education (Selvaraj & Azman, 2020). Conversely, RCC generated by students is related to the collective attitudes, behaviors, and activities of the students themselves that foster a culture of accountability and self-direction (Fernández-Río et al., 2019). Examples include

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students actively engaging in their learning's decision-making processes, setting their own goals, monitoring their own progress, and exhibiting a willingness to initiate and take charge of their educational outcomes.

For example, in a physical education context, an impactful Responsible Classroom Climate creates a setting where students feel motivated to be accountable for their own health and wellness. Educators can foster this climate by empowering students to set their own fitness objectives, select their activities, and take ownership of their health and fitness progress (Ennis, 2017; Escartí et al., 2015). Studies show that students who sense a strong responsibility in their physical education classes are more inclined to actively engage in the activities, regulate their fitness routines more effectively, and maintain a robust commitment to a healthy lifestyle beyond the school environment (Martinek et al., 2019; Polet et al., 2019). Additionally, a supportive and empowering RCC can lead to greater enjoyment of physical activities (Pulimeno et al., 2020), thereby increasing students' motivation and participation in PE classes, which ultimately enhances their overall physical and mental health (Berki & Tarjányi, 2022).

Meanwhile, *cognitive failures* are defined as disruptions in cognitive functions such as memory, attention, perception, and decision-making, leading to mistakes, inefficiencies, or issues in performing tasks or processing information efficiently (Carrigan & Barkus, 2016). These failures may manifest in daily life as forgetfulness, distractibility, poor judgment, misinterpretations, or trouble with focus and concentration. While occasional cognitive mishaps are common and may be attributed to factors like fatigue, stress, or external distractions, repeated or constant occurrences might indicate deeper cognitive dysfunction or damage (Podlesek et al., 2021). Possible causes of cognitive failures include aging-related cognitive decline (Deary et al., 2009), neurological conditions (Mitchell et al., 2010), mental health issues (Fiorenzato et al., 2021), lifestyle factors (Dominguez et al., 2021), or individual differences in cognitive capacity and performance. Addressing cognitive failures is crucial, involving strategies to enhance memory, attention, and decision-making, implementing lifestyle modifications for better cognitive health, and, if necessary, consulting a professional when cognitive issues severely affect one's daily life or well-being. Research identifies three primary

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components of cognitive failures: *forgetfulness, distractibility*, and *false triggering* (Broadbent et al., 1982).

First, *forgetfulness* refers to moments when people experience lapses in memory or cognition, affecting their ability to remember information or complete tasks, manifesting as overlooked appointments, lost items, or an inability to remember recent events or details (Bjork & Bjork, 2019). Such cognitive lapses can occasionally occur and might stem from stress, fatigue, or distractions; however, if they are frequent or persistent, they may indicate deeper issues related to memory, focus, or other cognitive functions (Robinson et al., 2013). Age, brain health issues, mental health conditions, inadequate sleep, and continuous stress are factors that can exacerbate forgetfulness, affecting individuals differently based on their cognitive health and capacity (Bolsius et al., 2023; Saeedi & Rashidy-Pour, 2021). Second, *distractibility* denotes an individual's difficulty in maintaining attention on a given task or stimulus due to internal or external diversions (Ziegler et al., 2018). This condition often results in repeated interruptions in thought processes, difficulty sustaining attention, or a propensity to be swayed by irrelevant information. This can severely impact one's efficiency, leading to mistakes, overlooked deadlines, or decreased productivity (Hofheimer, 2020) across various domains like employment, education, and personal life. Factors contributing to distractibility include differences in attention control, environmental stimuli, mental fatigue, stress, and cognitive overload. (Cassuto et al., 2013; Sörqvist & Rönnberg, 2014) Conditions such as attention-deficit/hyperactivity disorder (ADHD) or anxiety can also contribute to a heightened state of distractibility. (Wilens & Spencer, 2010) Lastly, *false triggering* occurs when individuals inaccurately interpret irrelevant stimuli as significant, prompting inappropriate reactions (Zhou et al., 2021). This misperception can arise from perceptual errors, cognitive biases, or incorrect interpretation of sensory information, leading to unnecessary responses to benign triggers. Factors like increased stress, preexisting cognitive biases, perceptual distortions, and attention lapses can result in such erroneous activations (Murata et al., 2015). This variation in cognitive processing and event perception influences the chance of incorrect responses or false alarms.

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Cognitive failures and the Responsibility Classroom Climate have garnered significant interest among education researchers, highlighting their notable effects on the dynamics of classrooms and the success of students (del-Valle et al., 2024; Manzano-Sánchez et al., 2024). Despite extensive research efforts in educational environments, a focused examination into how PRCC influences cognitive lapses, specifically within the realm of physical education in tertiary education, remains undocumented. This omission represents a considerable void in understanding the potential for RCC — which fosters a sense of autonomy and accountability — to mitigate cognitive failures among university-level physical education students. Addressing this gap is critical, considering the potential benefits that a positive classroom climate can bring in reducing instances of forgetfulness, distraction, and other cognitive mishaps that can hinder academic achievement and personal development. Research in this field could illuminate how cultivating a responsible and independent learning environment could significantly diminish the occurrence and impact of cognitive failures. This insight is particularly vital in physical education settings, where cognitive and physical aspects intertwine significantly. Furthermore, exploring the interplay between PRCC and cognitive failures can provide empirical evidence for developing targeted educational strategies and interventions. These could potentially enhance students' cognitive performance and, subsequently, their learning outcomes and health behaviors. Understanding this relationship could also inform policy and curriculum design, fostering environments that not only support physical fitness but also mental acuity and academic success. Hence, advancing research in this domain is not just beneficial but essential for holistic student development and well-being.

Perspectives on Responsibility-based Education

The establishment of a responsible classroom environment, which is commonly associated with education ideals centered upon responsibility, has a substantial impact on student involvement, autonomy, and overall learning achievements (Closs et al., 2022; Hanaysha et al., 2023). In this educational setting, instructors create an environment that fosters student autonomy, promoting self-reflection and comprehension of the outcomes of their actions. Instructors promote this process by

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establishing explicit guidelines, delivering insightful evaluations, and fostering occasions for students to exercise autonomy in their learning (Alonazi, 2017). This strategy not only improves student motivation and involvement but also fosters the cultivation of crucial life skills such as decision-making, problem-solving, and self-regulation. By establishing a climate that promotes a sense of ownership, cognitive failures can be minimized, resulting in enhanced focus and dedication to academic work (Han et al., 2022). This, in turn, leads to improved academic achievement and personal growth.

On the other hand, a responsible classroom climate, as perceived by the students, entails their active engagement and dedication to their educational progress (Ma & Wei, 2022). Students in these types of environments experience a strong feeling of accountability for their learning and are driven to actively interact with the subject, contribute to class discussions, and accept constructive comments in a positive manner. This sense of responsibility is nurtured through a conducive and empowering atmosphere where students' viewpoints are respected and their efforts are acknowledged (Ibarra, 2022). Participating actively in this particular classroom environment helps reduce cognitive failures like being easily distracted and forgetting things, since students are more concentrated and committed to their learning activities. In the end, the collaboration between a teacher who guides and a student who actively participates in creating a responsible classroom environment promotes a comprehensive educational experience that not only enhances academic achievement but also nurtures the personal and social growth of students.

Objectives of the Study and Hypotheses formulation

The objective of the study is to investigate the direct influence of perceived responsible classroom climate on cognitive failures, specifically forgetfulness, distractibility, and false triggering, within the context of physical education. This research aims to understand how a classroom environment characterized by responsibility and autonomy affects the frequency and intensity of cognitive lapses among students engaged in physical education activities at the higher education level.

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This area of research remains largely unexplored, particularly in the Philippines, thus presenting a novel opportunity to understand the dynamics within this specific educational setting. Additionally, the study aims to test the following hypotheses to further delineate the relationship between PRCC and cognitive failures in the physical education domain:

H_1: PRCC has no direct influence on cognitive failures

H_{1a}: PRCC generated by the students has no direct influence on cognitive failures

H_{1b}: PRCC generated by the Physical Education teacher has no direct influence on cognitive failures

H_2: PRCC has no direct influence on forgetfulness

H_{2a}: PRCC generated by the students has no direct influence on forgetfulness

H_{2b}: PRCC generated by the PE teacher has no direct influence on forgetfulness

H_3: PRCC has no direct influence on distractibility

H_{3a}: PRCC generated by the students has no direct influence on distractibility

H_{3b}: PRCC generated by the PE instructor has no direct influence on distractibility

H_4: PRCC has no direct influence on false triggering

H_{4a}: PRCC generated by the students has no direct influence on false triggering

H_{4b}: PRCC generated by the PE instructor has no direct influence on false triggering

Table 1 provided a clear linkage between the study's hypotheses, objectives, and corresponding research questions. It outlined how each hypothesis was connected to a specific research objective and posed related questions, aiding in understanding how the study investigated the influence of the perceived responsibility classroom climate on cognitive failures (i.e., forgetfulness, distractibility, and false triggering).

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Table 1

Hypotheses, Objectives, and Research Questions

Hypothesis	Objective	Research Question
H_1: PRCC has no direct influence on cognitive failures	Examine if PRCC influences cognitive failures	Does PRCC have an influence on cognitive failures?
H_{1a}: PRCC generated by students has no direct influence on cognitive failures	Investigate whether student-generated PRCC influences cognitive failures	Does student-generated PRCC influence cognitive failures?
H_{1b}: PRCC generated by instructors has no direct influence on cognitive failures	Investigate whether instructor-generated PRCC influences cognitive failures	Does instructor-generated PRCC influence cognitive failures?
H_2: PRCC has no direct influence on forgetfulness	Determine if PRCC influences forgetfulness	Does PRCC influence forgetfulness?
H_{2a}: PRCC generated by students has no direct influence on forgetfulness	Explore the influences of student-generated PRCC on forgetfulness	How does student-generated PRCC influence forgetfulness?
H_{2b}: PRCC generated by instructors has no direct influence on forgetfulness	Explore the influences of instructor-generated PRCC on forgetfulness	How does instructor-generated PRCC influence forgetfulness?
H_3: PRCC has no direct influence on distractibility	Assess whether PRCC influences distractibility	Is PRCC related to distractibility?
H_{3a}: PRCC generated by students has no direct influence on distractibility	Examine if student-generated PRCC influences distractibility	Does student-generated PRCC influence distractibility?
H_{3b}: PRCC generated by instructors has no direct influence on distractibility	Examine if instructor-generated PRCC influences distractibility	Does instructor-generated PRCC influence distractibility?
H_4: PRCC has no direct influence on false triggering	Investigate if PRCC influences false triggering	Is PRCC linked to false triggering?
H_{4a}: PRCC generated by students has no direct influence on false triggering	Determine if student-generated PRCC influences false triggering	How does student-generated PRCC influence false triggering?
H_{4b}: PRCC generated by instructors has no direct influence on false triggering	Determine if instructor-generated PRCC influences false triggering	How does instructor-generated PRCC influence false triggering?

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Methods And Materials

Participants

The respondents for the study are undergraduate students currently enrolled in various Physical Education classes during the 2nd Semester of the Academic Year 2023-2024 at Bulacan State University located in the City of Malolos, Bulacan, Region III, Philippines. The study focused on these year levels because minor physical education classes are only accessible during the first and second semesters for first- and second-year students. Data was gathered from respondents using the *purposive sampling* method. This approach entails deliberately choosing individuals or cases that exhibit particular characteristics relevant to the research study, in order to meet the goals of the investigation (Rahman et al., 2022). Currently, there are 6,000 students from the first and second years enrolled in both Physical Education 2 and Physical Education 4 courses. To ensure adequate statistical strength and accuracy in this study, the necessary sample size was determined with a 95% confidence level and a 5% margin of error, using the *Raosoft Sample Size Calculator*. In this context, the suggested sample size was 362. Notably, 668 students participated in the survey. After the process of data cleaning, a final tally of 617 completed surveys was achieved, resulting in an overall response rate of 92.37%.

Table 2 represents the distribution of respondents based on gender. Based on the distribution table, most of the respondents are female, followed by male, members of the LGBTQIAP+, and those who prefer not to disclose their gender identity [N_{Female} = 358(58.4%), N_{Male} = 206(33.4%), $N_{\text{LGBTQIAP+}}$ = 44(7.1%), and $N_{\text{Prefer not to say}}$ = 9(1.5%)]. Meanwhile, in terms of year level, most of the respondents are first year, followed by second year students [$N_{\text{1st year}}$ = 478(77.5%) and $N_{\text{2nd year}}$ = 139(22.5%)].

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Table 2

Distribution table based on gender

Variable	*Item*	*N(%)*
Gender	Female	358(58.4%)
	Male	206(33.4%)
	LGBTQIAP+	44(7.1%)
	Prefer not to say	9(1.5%)
Year Level	1st year	478(77.5%)
	2nd year	139(22.5%)

Instrument

In order to gather data from the respondents, online survey through the use of Google forms was utilized. The collection of data was conducted last January-March 2024. The gathering of data was made possible by sending the link of the Google Forms through the educational platform (Google Classroom) used by Physical Education instructors. The survey questionnaire that was used to obtain data from the respondents is subdivided into three parts:

1. The first part obtained data about respondents' demographic characteristics (i.e., gender and year level).
2. The second part consist of the Perceived Classroom Responsibility Climate Questionnaire by Fernández-Río et al. (2019). This 10-item instrument assessed the classroom responsibility climate fostered by the instructor and the students in different subject lessons, such as Physical Education. Responses are encoded using a 7-point Likert Scale ranging from 1- "Strongly disagree" to 7- "Strongly agree."
3. The third part is the Cognitive Failures Questionnaire by Broadbent et al. (1982). This 25-item questionnaire examined the frequency with which people experienced cognitive failures, such as absent-mindedness in everyday life - slips and errors of perception, memory, and motor functioning for the past 6 months. Moreover, this study have utilized three different factors as stated by Rast et al. (2009), which includes forgetfulness, distractibility and false

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triggering. Responses are recorded using a 5-point Likert Scale ranging from 0- “Never” to 4- “Very often.”

Furthermore, normality, bivariate correlation, and reliability tests were performed on the constructs being measured in the study. As can be seen in Table 3, the skewness and kurtosis value of most of the constructs obtained the threshold (-2, 2), indicating that most of the data are normally distributed. Furthermore, based on the bivariate correlation analysis, most of the constructs were found to be interrelated ($p < .05$). Lastly, all constructs are highly reliable, with Cronbach’s Alpha (α) values ranging from .81 to .95.

Table 3

Normality estimates, bivariate correlation and reliability test

Constructs	Mean ± SD	*Skew*	*Kurt*	*1*	*2*	*3*	*4*	*5*	*6*
PRCC_S	6.05 ± 1.00	-1.628	3.715	(.91)					
PRCC_T	6.45 ± .84	-2.368	8.427	.68**	(.95)				
FORG	2.40 ± .75	-.155	-.137	-.075	-.002	(.81)			
DIST	2.66 ± .78	-.505	.234	-.005	.066	.63**	(.84)		
FS	1.90 ± .83	.190	-.166	-.12**	-.021	.69**	.58**	(.84)	
COGFAIL	2.32 ± .68	-.049	.149	-.078	.016	.88**	.85**	.88**	(.92)

Note: Significance $p < .05$ (2-tailed).
Legend: PRCC- Perceived Responsibility Climate, PRCC_S- Perceived Responsibility Climate generated by students, PRCC_I- Perceived Responsibility Classroom Climate generated by instructors, COGFAIL- Cognitive Failures, FORG- Forgetfulness, DIST- Distractibility, FS- False Triggering.

Statistical Analysis

In order to determine the direct influence of PRCC to COGFAIL, predictive analysis such as the *Multiple Regression Analysis* has been performed. It is a statistical technique used to forecast the value of a dependent variable by considering the values of two or more independent variables (Li et al., 2022). It assists in determining the magnitude and nature of the correlation between the dependent variable and each independent variable, while accounting for the influence of other variables. In this study, PRCC (generated by both instructor and students) were regressed to overall COGFAIL and to its factors (i.e., forgetfulness, distractibility and false triggering).

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Ethical Statement

Highest Ethical considerations were strictly followed in the conduct of the study. The data gathering was conducted through online survey using Google Forms. In the Google Forms, the purpose of the study, inclusion criteria, instruments to be used, and the components/variables which will only be measured in the entire conduct of the study are presented. Additionally, the researchers provided the benefits of the study to the institution, community, and its contribution to scientific knowledge. The online survey underlined that participating in the study is voluntary, and respondents can choose to withdraw at any moment. The respondents were similarly advised of the potential minor hazards associated with their involvement in the research, including the experience of unease when responding to personal and/or sensitive survey inquiries. In addition, respondents were informed that there is no monetary compensation associated with providing information for the study. The respondents were additionally informed regarding the information that would be gathered via Google Forms and transferred to an Excel file for evaluation. The protected password for this data was disclosed, with only the researchers granted personal access to it. Additionally, they were informed that the aforementioned data would be stored on a USB drive for a duration of three (3) months, after which it would be irrevocably removed from the system. Additionally, respondents were notified that the data that was obtained would no longer be utilized in any subsequent or secondary research. Withdrawal of respondents participation in the study will not have any adverse effects on their relationships with the involved researchers or research organizations, nor will it affect their contributions to any future services or current programs. In order to maintain the anonymity and confidentiality of the respondents, their identities and names were withheld throughout the data collection, analysis, and reporting of the study’s findings. Due to the aforementioned conditions, respondents were at any moment permitted to withdraw from the study or request a debriefing. All respondents’ information were securely protected in accordance with the Data Privacy Act of 2012, also known as Republic Act 10173.

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Results

Table 4 presents the results in the multiple regression analysis performed determining the direct influence After performing multiple regression analysis, it was observed that PRCC predicts COGFAIL, suggesting that PRCC significantly influences COGFAIL [$F(2, 614) = 4.687$, $p = .015$]. Furthermore, the $R^2 = .015$ suggests that the model accounts for 1.5% of the variance in COGFAIL. In this regard, **H1** has been rejected. Additionally, the coefficients were also examined to determine the direct of each variables to COGFAIL. Based on the findings it was observed that PRCC_S ($\beta = -.113$, $t = -3.037$, $p = .002$) and PRCC_I ($\beta = .105$, $t = 2.357$, $p = .019$) directly and significantly influences COGFAIL. Hence, **H1a** and **H1b** were rejected.

Moreover, it was observed that PRCC predicts FORG, implying that PRCC significantly influences FORG [$F(2, 614) = 3.141$, $p = .044$]. Additionally, the $R^2 = .010$ suggests that the model accounts for 1.0% of the variance in FORG. Therefore, **H2** has been rejected. Meanwhile, it was observed that PRCC_S significantly influences FORG ($\beta = -.103$, $t = -2.506$, $p = .012$), except for PRCC_I ($\beta = .082$, $t = 1.672$, $p = .095$). Thus, **H2a** has been rejected, and **H2b** has been supported.

Additionally, it was observed that PRCC does not predict DIST, suggesting that PRCC is not significantly and directly related to DIST [$F(2, 614) = 2.781$ $p = .063$]. Also, the $R^2 = .009$ indicates that the model accounts for 0.9% of the variance in DIST. In this, **H3** has been accepted. Interestingly, when the coefficients were independently examined, it was observed that PRCC_I is a predictor of DIST ($\beta = .121$, $t = 2.355$, $p = .019$), except for PRCC_S ($\beta = -.073$, $t = -1.702$, $p = .089$). Therefore, **H3a** has been supported and **H3b** has been rejected.

Lastly, it was unraveled that PRCC predicts FS, hypothesizing that PRCC is significantly and directly related to FS [$F(2, 614) = 6.741$ $p = .001$]. Also, the $R^2 = .021$ suggests that the model accounts for 2.1% of the variance in FS. In this, **H4** has been rejected. Also, both PRCC_S ($\beta = -.164$, $t = -3.634$, $p <.001$) and PRCC_I ($\beta = .113$, $t = 2.091$, $p = .037$) were found to be significantly related to FS. Thus, **H4a** and **H4b** were rejected.

Overall, the findings demonstrate that PRCC, whether generated by students or instructors, has meaningful influences on various cognitive outcomes, particularly in

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reducing cognitive failures. The role of students appears particularly important in addressing forgetfulness, while instructors are crucial to managing distractibility and ensuring a responsible classroom environment that supports cognitive accuracy.

Table 4

Multiple Regression analysis and hypotheses testing

Hypothesis	Regression weights	Beta Coefficient	R^2	*F*	*t*	*p*	Decision
H_1	PRCC → COGFAIL	-	.015	4.687	-	.010	Rejected
H_{1a}	PRCC_S → COGFAIL	-.113	-	-	-3.037	.002	Rejected
H_{1b}	PRCC_I → COGFAIL	.105	-	-	2.357	.019	Rejected
H_2	PRCC → FORG	-	.010	3.141	-	.044	Rejected
H_{2a}	PRCC_S → FORG	-.103	-	-	-2.506	.012	Rejected
H_{2b}	PRCC_I → FORG	.082	-	-	1.672	.095	Accepted
H_3	PRCC → DIST	-	.009	2.781	-	.063	Accepted
H_{3a}	PRCC_S → DIST	-.073	-	-	-1.702	.089	Accepted
H_{3b}	PRCC_I → DIST	.121	-	-	2.355	.019	Rejected
H_4	PRCC → FS	-	.021	6.741	-	.001	Rejected
H_{4a}	PRCC_S → FS	-.164	-	-	-3.634	<.001	Rejected
H_{4b}	PRCC_I → FS	.113	-	-	2.091	.037	Rejected

Note: Significance p <.05.
Legend: PRCC- Perceived Responsibility Climate, PRCC_S- Perceived Responsibility Climate generated by students, PRCC_I- Perceived Responsibility Classroom Climate generated by instructors, COGFAIL- Cognitive Failures, FORG- Forgetfulness, DIST- Distractibility, FS- False Triggering.

Discussion

The results suggest that a RCC generated by students themselves has a significant effect on cognitive failures, including forgetfulness, distractibility, and false triggering. This can be ascribed to a rise in student participation and a feeling of ownership over their learning environment, resulting in improved concentration and organizational abilities. A student-led RCC cultivates a nurturing and cooperative environment, thereby alleviating stress and enhancing cognitive performance (Kutsyuruba et al., 2015). Moreover, actively participating in the creation of a positive educational environment helps to build essential cognitive abilities and reduce instances of mental errors (Song & Cai, 2024). Therefore, it is essential to cultivate a sense of accountability in students in order to promote their cognitive well-being and achieve academic excellence. Furthermore, the establishment of the RCC by Physical Education instructors has an immediate influence on students' cognitive shortcomings. By fostering an atmosphere that fosters accountability, educators motivate students to actively engage in their education and well-being (Zheng, 2022). This pedagogical technique results in enhanced concentration, diminished memory lapses, and decreased

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susceptibility to distractions among students. Through cultivating an atmosphere of responsibility and assistance, educators empower students to enhance their organizational and coping abilities (Collie & Martin, 2016), which play a vital role in reducing cognitive errors. Hence, the active participation and techniques utilized by Physical Education instructors in creating a conscientious learning environment have an important influence on the cognitive aptitude and general achievement of their students.

Additionally, the establishment of an RCC by students is directly linked to a reduction in cognitive failures. When students proactively establish a learning environment characterized by accountability, mutual regard, and active participation, they demonstrate reduced occurrences of cognitive lapses, such as memory lapses, lack of focus, and incorrect associations (Dunlosky et al., 2013). This enhancement can be ascribed to the students' elevated sense of ownership and engagement, which amplifies their focus on details, dedication to class activities, and general attentiveness. When students take charge of their own learning in a student-led RCC, they become more actively involved, focused, and driven (Jaleel & Premachandran, 2016; Rotgans & Schmidt, 2011), resulting in a decrease in cognitive lapses. Thus, enabling students to actively participate in the classroom environment during physical education sessions greatly improves their cognitive functioning and learning results. On the other hand, the results indicate that the establishment of an RCC by the Physical Education teacher does not have any immediate influence on student forgetfulness. This suggests that although the teacher's focus on responsibility and independence is important for student engagement and learning, it may not directly address the cognitive part of students' forgetfulness. Factors such as personal organization, intrinsic motivation, and individual memory skills (Gargrish et al., 2022; Roberts et al., 2011), which are not entirely influenced by the teacher's classroom climate, may have a more significant effect on students' memory retention in physical education. This suggests that although a teacher-led approach in a physical education setting helps create a positive learning environment, it may be essential to use extra student-centered strategies and interventions to explicitly target and decrease instances of forgetfulness.

Moreover, the results suggest that the RCC implemented by students does not directly influence the reduction of distractibility. This implies that although student-

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generated RCC can promote involvement, responsibility, and a sense of community, these factors may not directly connect to or alleviate the particular cognitive problem of distractibility. Factors such as the duration of individual attention, external indicators in the environment, and personal degrees of interest can still affect distractibility (Cicekci & Sadik, 2019; Unsworth & McMillan, 2017), even in a responsible learning setting. Hence, although a student-led responsible environment has a good impact on various parts of the learning experience, specific techniques may be necessary to address and enhance attentional ability to concentrate. On a positive note, the teacher's implementation of RCC appeared to have a noteworthy influence on reducing student distractibility. Establishing a classroom atmosphere that encourages accountability and self-reliance can result in a heightened level of concentration and active participation in the learning process for students (Munna & Kalam, 2021; Oates, 2019). An environment with defined expectations, organized activities, and regular feedback might mitigate students' proclivity for distraction. The active participation of the teacher in creating an environment where students comprehend their duties and obligations can result in improved focus and a decrease in distracting behavior (Kennedy et al., 2017; Sun & Shek, 2012). This implies that although students have an important impact on molding their learning environment, the teacher's influence in creating a well-organized and disciplined setting is critical in reducing distractions, especially in the dynamic and frequently unpredictable physical education setting.

Additionally, the RCC fostered by students has been discovered to have a direct and adverse influence on false triggering. When students assume responsibility for establishing a classroom atmosphere that prioritizes responsibility, mutual respect, and personal involvement, there is a clear reduction in the frequency of false triggering. False triggering refers to a cognitive error in which individuals react improperly to stimuli that are not relevant. This decrease is explained by improved situational awareness, enhanced concentration, and a better grasp of the expectations of the class—all of which are promoted in a student-driven RCC (Lodge et al., 2018; Wang et al., 2022). In such settings, students are more inclined to effectively analyze information, distinguish between significant and irrelevant cues, and respond appropriately to the physical education environment. This suggests that giving students the ability to

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influence their learning environment might greatly reduce the chances of misunderstandings and incorrect responses during physical activity. On the contrary, study finding has demonstrated that when instructors build an RCC, it directly reduces instances of false triggering among students. By establishing a learning environment in Physical Education that prioritizes explicit guidelines, individual responsibility, and a systematic approach to activities (Abu Hussain, 2021; Svartdal et al., 2020), students develop better skills in distinguishing important information from irrelevant diversions. As a result, the occurrence of false triggering is reduced. The structured atmosphere facilitates students' concentration on the current task, comprehension of the requirements, and proper response to the specific cues in the physical activity setting (Abusleme-Allimant et al., 2023; Vergara-Torres et al., 2021). By creating an environment in which duties are clearly outlined and expectations are consistently conveyed, the instructor plays a crucial role in improving students' mental accuracy, thereby reducing the occurrence of incorrect answers or misunderstandings in physical education classes.

Regarding responsibility-based, study results suggests that the classroom atmosphere, whether shaped by students or instructors, has an important influence on cognitive behaviors and educational outcomes (Cacciamani et al., 2021; Melero-Cañas et al., 2021), although the impact may not be substantial. When students take the initiative to create an RCC, it results in a decrease in cognitive failures, such as reduced forgetfulness and distractibility. Nevertheless, the extent of the benefit indicates that although student engagement and ownership have a favorable influence on cognitive performance, their overall contribution in reducing cognitive failures may not be large. Moreover, when physical education instructors take the lead in promoting RCC, there is an apparent influence on reducing distractions and false triggers. This suggests that structured, teacher-led conditions can improve concentration and accurate reactions to stimuli, although the effects may not be significant.

Even though they have a minimal influence, these results highlight the importance of responsibility-based education in improving cognitive functioning and learning opportunities in physical education. The combination of responsible climates created by students and guided by instructors enhances cognitive performance. However, the extent

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of this improvement indicates that responsibility-based education is merely one of multiple factors that influence student achievement. In general, using responsibility-based methods in physical education has beneficial implications on reducing cognitive lapses and improving student attention. However, the influence of these practices on cognitive failures may not be very substantial, suggesting the necessity of using diverse techniques in education.

Conclusion

The findings of this study underscore the complex association between perceived responsibility classroom climate and cognitive failures in physical education settings, highlighting the potential benefits of cultivating conditions that encourage responsibility, whether instigated by students or instructors. This research tested several hypotheses regarding the influence of PRCC on cognitive failures, forgetfulness, distractibility, and false triggering.

Contrary to H_1, which hypothesized no direct influence of PRCC on cognitive failures, the results demonstrated that PRCC significantly influences cognitive failures, leading to the rejection of H_1. This suggests that the responsibility climate within the classroom, whether fostered by students or instructors, plays a measurable role in reducing the occurrence of cognitive failures, such as forgetfulness, distractibility, or confusion during tasks. Specifically, PRCC generated by students and instructors significantly influenced cognitive failures, resulting in the rejection of both H_{1a} and H_{1b}, indicating that both groups contribute to shaping a responsible environment that reduces these cognitive errors.

Additionally, H_2 predicted no direct influence of PRCC on forgetfulness. However, the findings indicated that students' PRCC generated significantly influenced forgetfulness, rejecting H_{2a}. This means that when students actively engage in a responsible classroom climate, their attentiveness and memory-related outcomes, like forgetfulness, are positively influenced. Conversely, PRCC generated by Physical Education instructors did not directly influence forgetfulness, thus supporting H_{2b}. This suggests that while an instructor-driven responsibility climate is essential, it may not

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directly influence forgetfulness, perhaps because students' self-regulation and responsibility play a more significant role in memory-related tasks.

Concerning distractibility, H_3 was partially supported. While PRCC overall did not influence distractibility, PRCC generated by instructors did have a predictive influence, leading to the rejection of H_{3b} but supporting H_{3a}. This implies that while students' perceived responsibility does not directly reduce distractibility, instructors fostering a responsible climate can help students stay more focused during lessons, highlighting the instructor's critical role in managing distractions in the classroom.

Finally, hypothesis H_4, which posited that PRCC would have no direct influence on false triggering, was rejected. Both PRCCs generated by students and instructors significantly influenced false triggering, leading to the rejection of H_{4a} and H_{4b}. This indicates that creating a responsible environment through student engagement and instructor leadership can help minimize false triggers—errors where students act based on incorrect or irrelevant stimuli—suggesting that a well-balanced responsibility climate positively influences students' cognitive accuracy.

Although this study provides valuable insights into how PRCC influences cognitive failures, it is essential to acknowledge its limitations. The sample was drawn solely from a state university in the Philippines, limiting the generalizability of the findings to a broader population. The respondents' cultural, educational, and social contexts also limit the study's applicability beyond this specific setting.

Future research should employ various methodologies to address these limitations and further explore the hypotheses. Longitudinal studies, cross-cultural comparisons, and experimental designs in diverse educational environments would better understand the relationship between PRCC and cognitive performance. Additionally, qualitative approaches such as interviews and focus groups could offer richer insights into students' and instructors' experiences with responsibility-based education.

In conclusion, this study significantly contributes to educational research by demonstrating the intricate connection between PRCC and cognitive failures in physical education settings. The findings provide new knowledge that challenges conventional teaching methods and suggests that fostering accountability can improve student

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cognitive performance. This research opens new avenues for understanding and enhancing educational practices, potentially advancing student outcomes by promoting responsibility within classroom climates.

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