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Original Article

EXPLORING THE RELATIONSHIP BETWEEN PHYSICAL LITERACY LEVELS, ENGAGEMENT AND EMOTIONALITY IN PHYSICAL EDUCATION CLASSES

EXPLORANDO A RELAÇÃO ENTRE OS NÍVEIS DE ALFABETIZAÇÃO FÍSICA, ENGAJAMENTO E EMOTIVIDADE NAS AULAS DE EDUCAÇÃO FÍSICA

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RESUMO

A alfabetização física (AFi) é o objetivo para os pesquisadores na Educação Física, buscando sujeitos competentes e capazes de aderir à atividade física ao longo de suas vidas, com desenvolvimento contínuo pessoal, social, afetivo e físico. Esta pesquisa é de natureza quantitativa, descritiva-correlacional, com um desenho não experimental e uma amostra não probabilística de 322 sujeitos, estudantes de 12 a 18 anos de escolas particulares, municipais e subsidiadas na cidade de Talca, Chile. O objetivo foi relacionar o nível de AFi, comprometimento e emocionalidade percebida. Os dados foram coletados por meio do Perceived Physical Literacy Instrument (PPLI), Behavioral Engagement Questionnaire (BEQ) e Escala de Avaliação do Estado de Ânimo (EVEA). Identificou-se uma relação positiva com um maior nível de alfabetização física, maior nível de alegria (r=0,37) e comprometimento emocional (r=0,54), diminuindo os índices de hostilidade (r=-0,25). As escolas particulares atingem os níveis mais altos de ansiedade ($\bar{X}$=3,2). Conclui-se que um maior nível de AFi está associado a um maior comprometimento e maior regulação dos fatores emocionais.

Palavras-chave: Alfabetização física, comprometimento, emocionalidade, adolescentes.

ABSTRACT

For the researchers, physical literacy (AFi) is the objective to be achieved in Physical Education, for seeking competent subjects, capable of adhering to physical activity throughout their lives, with continuous personal, social, affective, and physical development. Quantitative, descriptive-correlational research was carried out, with a non-experimental design and a non-probabilistic sample of 322 subjects, students from 12 to 18 years old from private, public, and subsidized schools in Talca, Chile. The aim was to relate the level of AFi, engagement and perceived emotionality. Data were collected by the Perceived Physical Literacy Instrument (PPLI), Behavioral Engagement Questionnaire (BEQ) and Scale for Mood Assessment (EVEA). A positive relationship was identified with a higher level of physical literacy, higher levels of happiness (r=0.37) and emotional engagement (r=0.54), decreasing the indexes of hostility (r=-0.25) and the private establishments reach the highest levels of anxiety ($\bar{X}$=3.2). It is concluded that the higher the level of AFi, the greater the commitment and the greater the regulation of emotional factors.

Keywords: Physical literacy, engagement, emotionality, adolescents.

Introduction

The data presented throughout history on the significant percentage of the world not engaging in physical activity (PA) and/or experiencing obesity or overweight reflect society's lack of adherence to physical activity and exercise. Carreiro da Costa[1] analyses these statistics as a failure of most PA promotion policies and strategies implemented, mentioning that the reasons for this failure are multiple and complex, stemming from sociocultural, economic, and political factors, and also from PA promotion strategies that overlook that physical inactivity is primarily a behaviour change problem.

Currently, there is a lack of motivation to participate in physical activity (PA) from an early age, as students show disinterest in Physical Education (PE) classes, with one of the reasons being the motivational climate created by the PE teacher. According to Flores Bernal et al.[2], this is a fundamental pillar in education and a key element for achieving commitment and adherence to sports. It serves as a crucial mechanism for the personal and social development of students, promoting the acquisition of physical-sporting activity habits into adulthood.

Physical literacy (PL) is an objective to achieve in Physical Education (PE), as conceptualized by its precursor, Margaret Whitehead[3], as "motivation, confidence, physical competence, knowledge, and understanding to maintain physical activity throughout life" (p. 5). De Balazs et al.[4] argue that promoting PL is necessary as an alternative to encourage proper education and reduce the existing gap with regular physical activity. The goal is to teach and assess basic concepts and skills, creating new social and economic opportunities.

While PE teachers can have a significant impact on students' development of physical literacy (PL), which has been recognized as an issue throughout history, the challenge goes beyond this. It is bidirectional, as the problem is also directed towards the students' limited sense of belonging within the PE domain. This affects their sense of connection and identification with the class and physical activity, hindering the development of commitment to personal and social growth and the "enjoyment of sharing a common interest with others, and the positive experience of being valued and respected by other people"[3;34].

Students' mood is a determinant in promoting meaningful learning during classes. According to Ibáñez[5], regarding the interaction of emotions in the classroom, emotions can shape students' actions and define the trajectory of their learning. Positive emotions enable favourable actions for learning, while negative emotions hinder it. Approaches to the concept of physical literacy (PL) encourage embracing the decision to move, incorporating human dimensions to give purpose and meaning to this action[6].

In the attempt to answer the question, "How does the level of physical literacy influence engagement and mood in students?" the general objective of this study is to analyse the relationship between physical literacy, engagement, and perceived emotional states of students in physical education classes.

Methods

Sample

The participants in this study were students from various types of educational institutions (municipal, private subsidized, and private) in the city of Talca, Maule Region, Chile, aged between 12 and 18. In a non-probabilistic sample of 322 subjects, 104 females (32.3%) and 218 males (67.7%) from five educational institutions—two municipal (Mun), two private subsidized (Sub), and one private (Pri)—were analysed. The schools were randomly selected from the national registry of educational institutions, provided by the Regional Ministry of Education Secretary of Maule. Subsequently, using the virtual roulette Piliapp, a total of twelve establishments from private, subsidized, and municipal dependencies were selected, and they were invited to participate in the study. Only five of them responded favourably.

Procedures

For data collection, the selected institutions were contacted, and a letter of request was provided to the directors. Five establishments confirmed their participation. Following the confirmation and a coordination meeting to establish the intervention parameters at the levels the institution was willing to engage, the research objective and data confidentiality were verbally explained to the students. Ethical principles outlined in the Declaration of Helsinki were respected, prioritizing the dignity, rights, safety, and well-being of the participants.

Participants who agreed to take part were given assent and consent forms, which if the student was a minor, needed to be signed by their guardian and subsequently returned to the researchers. Once the documents were received, the assessment was conducted by two

researchers in a suitable environment during the regular Physical Education class, with availability to clarify any questions raised by the students. The questionnaires were returned within the same class once completed, with an average questionnaire completion time ranging from 10 to 15 minutes.

Instruments

To assess the status of the variables of interest, three evaluation instruments were employed: the Perceived Physical Literacy Instrument (PPLI) created by Sum et al.[7] to measure perceived physical literacy, the Behavioral Engagement Questionnaire (BEQ) by Skinner et al.[8] measuring behavioural (BE) and emotional engagement (EE), and the Mood Assessment Scale (EVEA) by Sanz[9] measuring mood.

Regarding students' perceived physical literacy (PL), the PPLI consists of three items with a Likert scale from 1 to 5, totalling 15 points each. Item I assess self-sense and confidence, constituted by questions 1, 4, and 5 of the questionnaire. Item S measures self-expression and communication with others, including questions 6, 7, and 8. Item F evaluates knowledge and understanding of the benefits of being physically active, composed of questions 1, 2, and 9. The maximum score achievable on this instrument is 45 points.

The BEQ consists of 10 questions with a Likert scale from 1 to 5, divided into two parts; the average of the scores from the first five questions measures students' behavioural engagement, while the remaining questions measure emotional engagement. To obtain the results, an average is calculated for each set of questions, with a maximum score of 5 points per item.

The EVEA test is divided into 4 items, each consisting of 4 questions. Each question is rated on a Likert scale from 0 to 10, covering anxiety (AN), depression (D), hostility (H), and happiness (HP). To obtain the results, an average is calculated for each set of questions, with a maximum score of 10 points per item.

Statistical analysis

The collected data were grouped into a database created on the Excel platform, for subsequent transfer to the statistical software SPSS v.21. This facilitated a descriptive analysis using measures of central tendency, followed by calculating the correlation index between the variables of interest.

Results

The average age was 14.8 years (+1.85), with subgroups ranging from seventh to twelfth grade in educational centres. The sample distribution includes 38.19% of students from municipal schools, 50.93% from subsidized ones, and 10.86% from private schools (Table 1).

Table 1. Distribution of the sample by educational dependence, age, and gender

		Dependency type				
		Mun1	Mun2	Sub1	Sub2	Pri
	M	66	16	92	44	16
n=322	F	8	33	0	28	19
	TT	74	49	92	72	35
12 years	M	0	4	11	0	7
	F	0	6	0	0	6
	TT	0	10	11	0	13
13 years	M	0	7	22	0	6
	F	0	18	0	0	7
	TT	0	25	22	0	13
14 years	M	11	4	18	2	3
	F	1	9	0	9	6
	TT	12	13	18	11	9
15 years	M	7	1	16	7	0
	F	2	0	0	9	0
	TT	9	1	16	16	0
16 years	M	19	0	12	7	0
	F	2	0	0	10	0
	TT	21	0	12	17	0
17 years	M	15	0	9	5	0
	F	2	0	0	11	0
	TT	17	0	9	16	0
18 years	M	14	0	4	7	0
	F	1	0	0	5	0
	TT	15	0	4	12	0

Note: *n*= total sample; TT=total; M= male; F: female; Mun= municipal; Sub= private subsidized; Pri= private
Source: authors

The analysed data shows that the average score for Physical Literacy of the total sample (TT) reaches 78.6%, placing it above the upper third, although with a high data dispersion (35.4±6.6). Some individuals achieve the maximum score (45 points), while others do not reach 30% of the total (3 points), indicating a low level of PL and, consequently, underdevelopment in social skills, self-knowledge, and understanding of the benefits of physical activity. The results by item range between 73% and 87%, with the following average values per item: I (11±2.7), S (11±2.9), and F (13±2).

The students exhibit a high level of BE and EE, reaching 78% and 82% of the total, respectively, with a notable homogeneity in the data (4.1±0.7) (3.9±0.9). This ensures that there are no deficiencies in their willingness to participate in Physical Education classes, as students engage, make an effort, and enjoy them, occasionally even achieving the maximum score (Max.= 5).

The students in the sample achieve a high level of HP at 53%, while in AN, H, and D, they do not exceed 27%. However, the data dispersion reveals that some students reach over 80% of the maximum in these three items, indicating the need for specialized attention from professionals in the field to reduce these levels (Table 2).

Table 2. General results

	PPLI				BEQ		EVEA			
	I	S	F	TT	BE	EE	AN	H	D	HP
X	11	11	13	35,37	4,1	3,9	2,7	2,1	1,6	5,3
SD	2,7	2,9	2	6,59	0,7	0,9	2,2	2,2	2,0	2,5
Mode	11	14	15	37	4,2	4,4	0,0	0,0	0,0	5,0
Median	11	12	14	37	4,2	4	2,3	1,5	1,0	5,3
Top Score	*15p*	*15p*	*15p*	*45p*	*5p*	*5p*	*10p*	*10p*	*10p*	*10p*

Note: Average (X); Standard deviation (SD); **PPLI**: Perceived Physical Literacy Instrument; **I**: Sense of self and self-confidence; **S**: Self-expression and communication with others; **F**: Knowledge and understanding; **TT**: Total average; **BEQ**: Behavioral Engagement Questionnaire; **BE**: Behavioral Engagement; **EE**: Emotional Engagement; **EVEA**: Scale for Mood Assessment; **AN**: Anxiety; **H**: Hostility; **D**: Depression; **HP**: Happiness

Source: authors

It is observed that schools under municipal administration have the lowest average in the level of Perceived Physical Literacy (PPL), with no significant difference between private and subsidized schools. Similarly, this is reflected in items I, S, and F, placing municipal educational centres at a literacy level of 75%. Regarding the results of BE and EE, there is a similar range of averages among the establishments, with municipal schools showing lower values in both parameters, despite not presenting a significant difference.

Private schools show elevated levels of anxiety ($\overline{X}$=2.9); however, they simultaneously have the highest average in happiness ($\overline{X}$=6.7). On the other hand, it is concerning that municipal establishments do not reach 50% in this mood indicator, besides having higher depression indices ($\overline{X}$=1.8) compared to other educational dependencies. The most notable differences in averages between men and women are found in happiness levels. While men are happier, women exhibit higher levels of anxiety, depression, and hostility (Table 3).

Table 3. Results by dimensions

	Municipal			**Private Subsidized**			**Private**			**TT**			
	M	**F**	**TT**	**M**	**F**	**TT**	**M**	**F**	**TT**	**M**	**F**	**TT**	***p***
						PPLI							
I	10,4	10,0	10,2 (±2,8)	11,4	10,2	11,1 (±2,8)	10,6	10,9	10,7 (±2,3)	11,0	10,3	10,7	*0,02**
S	11,4	10,6	11,1 (±3,1)	11,9	10,6	11,6 (±2,9)	11,7	11,4	11,5 (±2,3)	11,7	10,7	11,4	*0,003**
F	12,2	13,0	12,3 (±2,5)	13,9	13,2	13,7 (±1,5)	13,9	14,0	13,9 (±1,1)	13,3	13,1	13,2	*0,25*
TT	34,0	33,3	33,8 (±7,2)	37,3	36,0	36,4 (±6,3)	36,2	36,3	36,3 (±4,6)	36,0	34,1	35,4	*0,01**
						BEQ							
BE	4,0	4,3	4,0 (±0,7)	4,1	4,3	4,2 (±O,7)	3,9	4,2	4,1 (±0,6)	4,0	4,3	4,1	*0,0003**
EE	3,6	4,0	3,8 (±0,8)	3,9	3,8	3,9 (±0,9)	3,9	3,9	3,9 (±0,8)	3,9	3,9	3,9	*0,26*
						EVEA							
AN	2,7	2,9	2,8 (±2,0)	2,4	2,9	2,6 (±2,2)	3,0	3,3	3,2 (±2,5)	2,6	2,9	2,7	*0,08*
H	2,1	2,3	2,1 (±2,0)	1,6	3,0	2,0 (±2,3)	2,3	2,2	2,2 (±2,2)	1,8	2,6	2,1	*0,002**

	Municipal			Private Subsidized			Private			TT			
	M	**F**	**TT**	**M**	**F**	**TT**	**M**	**F**	**TT**	**M**	**F**	**TT**	***p***
D	1,9	1,7	1,8 (±2,0)	1,2	2,2	1,5 (±2,1)	1,5	1,3	1,4 (±1,9)	1,5	1,8	1,6	*0,08*
HP	4,7	4,3	4,6 (±2,4)	6,1	3,9	5,5 (±2,5)	7,5	6,0	6,7 (±2,5)	5,7	4,4	5,3	*0,00002**

Note: **PPLI**: Perceived Physical Literacy Instrument; **I**: Sense of self and self-confidence; **S**: Self-expression and communication with others; **F**: Knowledge and understanding; **TT**: Total average; **BEQ**: Behavioral Engagement Questionnaire; **BE**: Behavioral Engagement; **EE**: Emotional Engagement; **EVEA**: Scale for Mood Assessment; **AN**: Anxiety; **H**: Hostility; **D**: Depression; **HP**: Happiness. **p-value** $\leq$ 0,05*

Source: authors

A weak positive correlation was identified between the total sample (TT) and HP (r=0.37); similarly, this pattern is observed in items I (self-confidence) (r=0.34), S (self-expression) (r=0.34), and F (knowledge of benefits) (r=0.26) concerning HP. On the other hand, a weak negative correlation (r=-0.30) is observed between items S and H (hostility), suggesting that as self-expression and communication with others increase, hostility levels decrease. Likewise, a better knowledge and understanding of the benefits of being physically active is associated with higher levels of happiness and lower levels of depression. Furthermore, a higher total level of perceived physical literacy is linked to an increase in happiness and a decrease in hostility levels (Table 4).

Table 4. Physical Literacy Mood and Engagement Relationship

	EVEA				BEQ	
PPLI	AN	H	D	HP	BE	EE
Item I	-0,1890	-0,1686	-0,1686	0,3419	0,2833	0,4352
Item S	-0,2289	-0,3022	-0,2071	0,3454	0,3031	0,4985
Item F	-0,1036	-0,1479	-0,1832	0,2605	0,4327	0,4494
TT	-0,2125	-0,2502	-0,2088	0,3763	0,3860	0,5414

Note: PPLI: Perceived Physical Literacy Instrument; **Item I**: Sense of self and self-confidence; **Item S**: Self-expression and communication with others; **Item F**: Knowledge and understanding; **TT**: Total average; **EVEA**: Scale for Mood Assessment; **AN**: Anxiety; **H**: Hostility; **D**: Depression; **HP**: Happiness. **BEQ**: Behavioral Engagement Questionnaire; **BE**: Behavioral Engagement; **EE**: Emotional Engagement.

Source: authors

Among the results of the PPLI and the BE, a weak positive correlation (r=0.43) was observed about item F, suggesting that as the F indicator increases, so does the BE of the subjects. Likewise, a weak positive correlation (r=0.49) was found with item S. Regarding the relationship between the PPLI and the BE, item S showed the highest correlation (r=0.498). Finally, a moderate positive correlation (r=0.54) was identified between the total results of the PPLI (TT) and the EE, indicating that as the level of PL increases, so does the EE of the subjects (Table 4).

A weak positive correlation (r=0.43) was identified between HP and EE, suggesting that an increase in HP will increase students' EE. Additionally, a weak negative correlation was found between EE and H (r=-0.30) and between EE and D (r=0.26), indicating that an increase in EE will decrease levels of hostility and depression in students (Table 5).

Table 5. Engagement and Mood Relationship

	EVEA			
BEQ	AN	H	D	HP
BE	-0,109	-0,090	-0,158	0,183
EE	-0,168	-0,307	-0,265	0,439

Note: BEQ: Behavioral Engagement Questionnaire; **BE**: Behavioral Engagement; **EE**: Emotional Engagement; **EVEA**: Scale for Mood Assessment; **AN**: Anxiety; **H**: Hostility; **D**: Depression; **HP**: Happiness.
Source: the authors

There is a significant difference between MUN and SUB schools (p=0,0006), indicating that municipal establishments have a lower level of PL among their students in basic and middle education compared to subsidized ones in the sample. Similarly, there are significant differences between MUN and PRI establishments (p=0,0274), with the latter having a higher level of AFi among their students, considering that the evaluated participants from the private establishment were in basic education (Table 6).

Table 6. Differences of PL by educational Dependency

	PPLI - Total		
	MUN	SUB	PRI
MUN	*	0,0006*	0,0274*
SUB	0,0006*	*	0,4572
PRI	0,0274*	0,4572	*

Note: PPLI: Perceived Physical Literacy Instrument; MUN= municipal; SUB= private subsidized; PRI= private
Source: the authors

Discussion

Based on the obtained data, it is evident that the strongest result occurs in the relationship between emotional commitment and perceived physical literacy (r=0.54), indicating that a higher level of physical literacy is associated with increased emotional commitment.

According to the results, there is a statistically significant difference between genders (p=0.01) concerning their perceived level of physical literacy, contradicting the findings of Muñoz et al.[10], who compared physical literacy levels in Spanish schoolchildren aged 8 to 12 and found no differences between genders (p=0.902). The study also observed that Spanish students have higher motivation and confidence (Domain C of the CAPL-2) and knowledge and understanding (Domain D of the CAPL-2), similar to the findings in this study with 78.6% perceived physical literacy. Additionally, concerning the F indicator of the PPLI and the D indicator (knowledge and understanding) of the CAPL-2, there is a difference that may be attributed to the age discrepancy among the evaluated subjects. In other words, higher age is expected to correlate with a greater level of physical literacy.

The results from this study regarding the impact of physical literacy on increased levels of happiness and decreased levels of hostility are consistent with Herrera's study[11], which links physical exercise to mood through EVEA. It determines that subjects with a high or moderate level of activity tend to have a cheerful mood ($\bar{X}$=5.49), similar to the data obtained in this study ($\bar{X}$=5.05), which is related to the level of perceived physical literacy

(r=0.3763) of the evaluated subjects since physical exercise is part of the motor competence component of physical literacy.

Vallejo and Jiménez's study[12] indicates that engaging in physical sports activities in adolescents results in increased self-confidence and self-concept. In that study group, there is a development of physical literacy consequent to physical activity practice, leading to an increase in attributes that compose physical literacy, promoting adherence to physical activity throughout life. These findings align with the results obtained in this study through the I indicator of the PPLI (improved self-concept and self-confidence) with 70.6%.

The limitations of the study arise from not achieving the initially expected total number (N) of students, hindering a more robust relationship and comparison of values provided by different instruments. Additionally, data related to age or school grade were not correlated or compared, and these factors should be addressed in future evaluations with a larger number of students to obtain a representative sample for the region or country.

Conclusion

Regarding to the results obtained from assessments conducted on students aged 12 to 18 in various establishments in Talca, with different administrative dependencies, a weak negative correlation is observed between the perceived level of physical literacy and indicators of anxiety, hostility, and depression. In contrast, a weak positive correlation is identified with the indicator of happiness. Likewise, a weak positive relationship is evident for behavioural commitment, and a moderate positive relationship is observed for emotional commitment with physical literacy.

It is recommended to conduct further studies and delve deeper into the field of physical literacy in Chile, as there is a limited amount of research in this area. The need to measure students' level of physical literacy and implement plans and programs to promote their academic development in this regard is emphasized.

References

1. Carreiro-da-Costa F. Educación física como proyecto de innovación y transformación cultural. Recie [Internet] 2019;3(2):19-32. DOI: https://doi.org/10.32541/recie.2019.v3i2.pp19-32
2. Matheu-Pérez A, Flores-Bernal R, Juica-Martínez P, Barrios-Queipo E, Mejías-Zamora B. Análisis de género de clases de la autodeterminación del rendimiento y la motivación en clase de Educación Física. Rev. cuba. investig. bioméd. (Online). 2019 [cited 2024 Jan 19]; 38 (2) Available from: https://revibiomedica.sld.cu/index.php/ibi/article/view/274
3. Whitehead M. Physical Literacy: Throughout the Lifecourse. Londres: Routledge; 2010. p.5-34.
4. de Balazs ACR, de D'Amico RL, Cedeño JJM. Alfabetización física: una percepción reflexiva. Dialógica: revista multidisciplinaria, 2017; 14(1), 87-102.
5. Ibáñez, N. Las emociones en el aula. Estud. Pedagóg. 2002;28:31-45. DOI: http://dx.doi.org/10.4067/S0718-07052002000100002
6. Contreras-Zapata K, Roa-Quintero T, Vásquez-Muñoz C, Castillo-Retamal F, Castillo-Retamal M. Aproximación a la implementación de la alfabetización física en Chile: una revisión narrativa. Retos, 2023; 47, 96–102. DOI: https://doi.org/10.47197/retos.v47.94922
7. Sum RK, Cheng CF, Wallhead T, Kuo CC, Wang FJ, Choi SM. Perceived physical literacy instrument for adolescents: A further validation of PPLI. J. exerc. sci. fit. (Online) 2018;16(1):26-31. DOI: https://doi.org/10.1016/j.jesf.2018.03.002
8. Skinner E, Furrer C, Marchand G, Kindermann T. Engagement and disaffection in the classroom: Part of a larger motivational dynamic. J. Educ. Psychol., 2008;100(4):765. DOI: https://doi.org/10.1037/a0012840
9. Sanz Fernandez J. Un instrumento para evaluar la eficacia de los procedimientos de inducción de estado de ánimo: la" Escala de Valoración del Estado de Ánimo"(EVEA). Anál. modif. conducta 2001[cited on Jan 21 2023];27(111):71-110. Available from: https://docta.ucm.es/rest/api/core/bitstreams/1b8af7e9-8c99-4c11-b903-0b400d1a4e06/content

10. Muñoz MM, García CL, García JMF, Rodríguez JIC, Zamorano ÁMD, Carlos-Vivas J. Valores de alfabetización física en niños con edades comprendidas entre 8 y 12 en Extremadura: Estudio piloto. E-motion (Huelva), 2020;15:1-30. DOI: https://doi.org/10.33776/remo.v0i15.4900
11. Herrera Tapia J. El ejercicio físico y el estado de ánimo. [undergraduate thesis]. Licenciatura. Universidad Técnica de Ambato-Facultad de Ciencias Humanas y de la Educación-Carrera de Pedagogía de la Actividad Física y Deporte. 2021[cited 2024 Jan 21]. Available from: https://repositorio.uta.edu.ec/jspui/handle/123456789/33398
12. Vallejo AG, Jiménez MA. Influencia de la Actividad Físico-Deportiva en el rendimiento académico, la autoestima y el autoconcepto de las adolescentes: el caso de la isla de Tenerife. Retos 2022; 46:120-128. DOI: https://doi.org/10.47197/retos.v46.93496

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