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Adaptation and validation of the research task distractor scale in Peruvian university students

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Unconventional distractions such as electronic devices are stimuli that divert attention during study tasks, especially those related to scientific research exercises in undergraduate education. In the absence of precise instruments to measure this phenomenon, the objective was to adapt and validate the Scale of Distractions in Research Tasks among Peruvian university students. The study is classified as an instrumental cross-sectional design, involving 1,003 university students aged between 18 and 47 years ($M = 20.93$, $SD = 4.30$) from three regions of Peru (Coast, Highlands, and Jungle), selected through convenience sampling. Content validity was assessed using Aiken's V coefficient, internal structure was examined through confirmatory factor analysis, and reliability was measured using the Omega coefficient. The results indicated that the judges positively evaluated the 5 items ($V > 0.70$), the internal structure confirmed the original model with satisfactory fit indices ($\chi^2(2) = 5.47$, $p = 0.187$, $CFI = 0.998$, $RMSEA = 0.023$, and $SRMR = 0.010$), and the reliability was acceptable ($\omega = 0.86$). In conclusion, the Peruvian version of the Scale of Distractions in Research Tasks has demonstrated to be a valid and reliable instrument, characterized by its brevity and a unifactorial structure.

KEYWORDS

validation study, distractors, research, university students, Peru

1. Introduction

In countries seeking to reduce their dependence on natural resources, scientific research has become essential in forming qualified professionals (Glass et al., 2018; Goyanes and Rodríguez-Gómez, 2018). However, this activity may be limited by distractions that take students' attention away and hinder the fulfillment of their academic responsibilities (Picado Juárez et al., 2017). According to the scientific literature, there are various factors that limit the scientific production of university students, including the lack of technological and methodological skills, the lack of motivation, and negative attitudes (Soto, 2020). However, there are still other factors that require further research, such as academic task distractors (Xu et al., 2020; Carranza et al., 2022), especially in the context of university research.

For the purposes of this research, distractors are defined as any stimulus that diverts attention from study tasks or activities related to teaching and learning (Feng et al., 2019). The scientific literature distinguishes between conventional and non-conventional distractors (Xu, 2015), the latter being the most common among university students as it is related to the use of

electronic devices. On this subject, although new technologies have been widely incorporated into higher education as an indispensable tool for learning (Liao and Wu, 2022), the phenomenon of so-called digital distraction has captured the attention of educational researchers, as devices such as laptops, smartphones, and tablets increasingly lead students to easily become distracted by social networks (Wu and Cheng, 2019). This has come to be considered an “epidemic” spread among university students, given their vulnerability to such distraction.

Upon reviewing the scientific literature, the available studies on this phenomenon report findings where digital distraction was highly reported and associated with low learning engagement among students. For example, there are reports where university students are found to intentionally stop what they are doing to use technological devices, and on them, particularly to browse social networks like Facebook (Hall et al., 2020). However, this would not be the only distractor with a major presence, as Picado Juárez et al. (2017) discuss the interference caused by another known non-conventional distractor, such as the case of music players (Feng et al., 2019). This was demonstrated in an experiment conducted by Calderwood et al. (2014), who reported that university students participating in a three-hour independent study session, on average, spent 73 min listening to music while studying, noting the activation of 35 distractions over the course of the 3 h.

In the Peruvian university setting, there are research-related requirements, such as the preparation of a thesis to obtain an academic degree and the writing of scientific articles and other research works (SUNEDU, 2019). To strengthen students’ skills, teachers and specialists often use methodological strategies, such as academic tasks, which are complementary activities of a specific class designed to achieve academic and formative objectives (Cubero, 2014). The preparation of a degree thesis, for example, is not a process that starts after graduation, as in many Peruvian universities its realization is promoted from the last study cycles, even from research subjects such as thesis, research seminar, scientific research methodology, and statistics (Romaní-romaní and Gutiérrez, 2022). Students must advance in their projects, analyses, and reports under a schedule of activities. In the same way, the writing of scientific articles is perfected through the tasks assigned by teachers, advisors, and specialists (DeLa Cruz-Vargas et al., 2019).

However, despite the importance of these scientific products, university students have found problems in successfully completing their research processes, mainly due to time issues (Perdomo and Morales, 2022), lack of mastery of the research methodology, and absence of motivation (Soto, 2020), among other factors. This has led to many of these research works being only presented in academic research days (Magariño-Abreus et al., 2021; Castro-Rodríguez and Pares-Ballasco, 2022), which are more in line with a final course evaluation context, while very few are presented and published in indexed scientific journals (Carvajal Tapia and Carvajal Rodríguez, 2018; Gualdron et al., 2019).

In the face of the situation of the problems that Peruvian university students face in successfully completing their research processes, it is essential to have documentary measurement tools that allow quantifying the phenomenon of distractors in the context of university research. Although there are studies that investigate the impact of distractors on the teaching and learning process at the higher level (Durán-Aponte and Pujol, 2013; Ramos-Galarza et al., 2017; Mendoza,

2018; Guillén, 2019), in Peru these evaluation tools are not yet available. There are interesting alternatives in other languages, such as the Online Task Distraction Scale proposed by Xu et al. (2020), which was recently translated and adapted to the Peruvian university context by Carranza et al. (2022). However, these alternatives only evaluate the presence of distractors in the context of academic tasks in general, and not in university research.

Therefore, it is convenient to use a scale adapted to the context of Peruvian university students to evaluate the distractors of research tasks. The present research aims to adapt and validate the distractor scale of research tasks in Peruvian university students.

2. Materials and methods

2.1. Design and participants

This study is a cross-sectional instrumental study (Ato et al., 2013) that included 1,003 university students of both genders, with a proportion of 53.8% women and with ages ranging from 18 to 47 years ($M = 20.93$, $SD = 4.30$). Participants were selected through a non-probabilistic convenience sample in three regions of Peru (Costa 27.7%, Sierra 45.2%, and Selva 27.1%). At the time of data collection, 60.8% of the participants studied at a private university and 39.2% at a state university. In addition, 38.5% of the participants belonged to the health sciences, 25.8% to the business sciences, 17.8% to the engineering sciences, and 17.9% to the social sciences.

2.2. Instruments

The Spanish version of the online task distraction scale, with 5 items, was used as a basis, which was translated and adapted by Carranza et al. (2022) and based on the Online Task Distraction Scale (Xu et al., 2020). The structure of the measure is unifactorial and has 5 response options in a Likert format, ranging from “Never” to “Always.” In terms of its psychometric properties, the adaptation study to the Peruvian university context reported an adequate level of content and reliability validity, but the unifactorial structure finally consisted of only 5 items, one less than the original version of 6 items.

To adapt the Research Task Distractor Scale (E-DTi) (Appendix), a focus group of university students from the three regions of Peru was organized, who met virtually. A total of 45 students from different programs and universities participated (24 men and 21 women). The adapted items were presented in time and context, and they were asked to comment on whether the meaning was clear and if the vocabulary used was understandable. During the meeting, two researchers recorded their comments and suggestions. In the end, as a result of this dynamic, the wording of item 1, which originally said “My mind wanders while I perform research tasks,” was changed to “My mind wanders while I perform research tasks (writing a research project, thesis, scientific article, essay, etc.)”

After adapting the E-DTi, 7 research experts (teachers certified by the National Council of Science, Technology and Technological Innovation of Peru) were consulted to evaluate the clarity, representativeness, and relevance of the 5 items. To do this, a validation form was prepared following the format proposed by Ventura-León (2022), where the experts scored on a scale of 0 to 3 if

the items were Not at all relevant/representative/clear or Totally relevant/representative/clear.

In addition to the E-DTi, other instruments were used to evaluate its validity in relation to other variables. The first was the Academic Engagement Scale (UWES S9) adapted to Peru by [Dominguez-Lara et al. \(2020\)](#), consisting of 9 items distributed in two factors. The second was the Academic Procrastination Scale (EPA) adapted to Peru by [Domínguez-Lara et al. \(2015\)](#) consisting of 14 items distributed in two factors. These instruments were applied to the target population.

2.3. Procedure

The study was carried out from September to November of 2022. Due to COVID-19 pandemic policies and the outbreak of monkeypox, it was decided to conduct the survey virtually through an online questionnaire in Google Forms. In the first section, informed consent, the purpose of the research, and the fact that participation was voluntary, anonymous, and for research purposes only were presented. Participants were invited via Facebook, Telegram, and WhatsApp, and their consent was requested before responding to the form.

2.4. Ethical considerations

The study was approved by the Ethics Committee of a Peruvian University (No. 134-2022/PD-USS). Before data collection, confidentiality guidelines and those established in the Helsinki Declaration were considered. Participants were informed about the purpose of the research and gave their informed consent.

2.5. Analysis

For statistical analysis, the Diagonally Weighted Least Squares with Mean and Variance corrected (WLSMV) estimator was used to perform Confirmatory Factor Analysis (CFA) since the items had five response categories ([Brown, 2015](#)). The RMSEA, SRMR, CFI, and TLI indices were evaluated to measure the fit of the model, where values lower than 0.08 for RMSEA and SRMR and values greater than 0.95 for CFI and TLI were considered adequate ([Kline, 2015](#); [Schumacker and Lomax, 2015](#)). The reliability of the scale was evaluated using the omega coefficient ([McDonald, 1999](#)), where a value of $\omega > 0.80$ is considered adequate ([Raykov and Hancock, 2005](#)).

A Multi-group Confirmatory Factor Analysis (MG-CFA) was conducted to assess the factorial invariance according to gender. A sequence of four variance hierarchy models was established: (1) configural invariance (base model), (2) metric invariance (equality of factor loads), (3) scalar invariance (equality of factor load and intercept), and (4) strict invariance (equality of factor loads, intercept, and residuals). A modeling strategy based on the differences in RMSEA (Δ RMSEA) was used to compare the sequence of models, where differences less than <0.015 indicate model invariance between groups ([Chen, 2007](#)).

All analyses were conducted in the RStudio environment ([RStudio Team, 2018](#)) and the “lavaan” ([Rosseel, 2012](#)) and “semTools” ([Jorgensen et al., 2018](#)) packages were used to perform the AFC and factorial invariance, respectively.

3. Results

[Table 1](#) shows that all items of the E-DTi received a positive evaluation from the experts ($V > 0.70$). It was found that item 1 was the most relevant ($V = 1.00$; 95% CI: 0.85–1.00), while items 3 and 4 were the most representative ($V = 1.00$; 95% CI: 0.85–1.00) and item 5 was the most understandable ($V = 1.00$; 95% CI: 0.85–1.00). In addition, it can be seen that the values of the lower limit (Li) of the 95% CI are adequate and all V values were statistically significant.

[Table 2](#) shows the descriptive results and the polychoric correlation matrix of the items of the E-DTi, with intercorrelations ranging from 0.27 to 0.79.

[Table 3](#) shows the results of the Confirmatory Factor Analysis. To obtain an adequate fit for the unidimensional model, the errors of the DTi1 and DTi2 items had to be correlated. This resulted in satisfactory indices: $\chi^2(2) = 5.47$, $p = 0.187$, CFI = 0.998, RMSEA = 0.023 and SRMR = 0.010.

[Table 4](#) shows the resulting factor loadings, which range from 0.31 to 0.85. The internal consistency coefficient for this unidimensional configuration is $\omega = 0.86$.

In the measurement invariance analysis, the fit was first evaluated for two groups determined by gender and then combined to estimate and evaluate the first level of invariance. The result of the configural invariance was an acceptable fit, $\chi^2(10) = 27.62$, $p = 0.00$, CFI = 0.986, RMSEA = 0.059, SRMR = 0.045. The planned levels of invariance were continued and the criteria for changes in the CFI, RMSEA, and SRMR were met, as seen in [Table 5](#).

Finally, correlation calculations were performed between the E-DTi, the academic procrastination scale (EPA), and the academic engagement scale (UWES-S9) ([Table 6](#)). An indirect and significant relationship was found between the E-DTi and UWES-S9, but no correlation was found between the E-DTi and the EPA. Therefore, discriminant validity is assumed.

4. Discussion

The training of researchers is essential for the scientific and technological progress of a country ([Magariño-Abreus et al., 2021](#)). The university plays a key role in this innovation system ([Taxt et al., 2022](#)) and it is important that the processes of research training are carried out in a complete manner ([Turpo-Gebera et al., 2020](#)) See ([Table 6](#)).

In Peru, due to different research initiatives and university teams ([Castro-Rodríguez and Pares-Ballasco, 2022](#)), there has been a significant increase in research in recent years ([Glass et al., 2018](#); [Gualdrón Frías et al., 2019](#)). However, there are still challenges and errors in the development of research projects ([Soto, 2020](#); [Perdomo and Morales, 2022](#)). Therefore, in light of the need for evaluation tools to investigate the effects of distractors on research, the objective of this research was to adapt and validate the distractors scale of research tasks in Peruvian university students ([Appendix](#)).

The study results demonstrate the psychometric validity of the E-DTi. Before the structural analysis, descriptive results and the polychoric correlations matrix were obtained, revealing values between 0.23 and 0.70. This indicates that the participating students perceived the questionnaire items for the unidimensional model of distractors in research tasks. Furthermore, the structural

TABLE 1 Aiken's V for the evaluation of the relevance, representativeness, and clarity of the items of the E-DTi.

Items	Relevance (n = 7)				Representativeness (n = 7)				Clarity (n = 7)			
	M	DE	V	IC 95%	M	DE	V	IC 95%	M	DE	V	IC 95%
Item 1	2.86	0.38	0.95	0.77–0.99	2.71	0.49	0.90	0.71–0.97	2.71	0.49	0.90	0.71–0.97
Item 2	2.86	0.38	0.95	0.77–0.99	2.86	0.38	0.95	0.77–0.99	2.86	0.38	0.95	0.77–0.99
Item 3	2.71	0.49	0.90	0.71–0.97	3.00	0.00	1.00	0.85–1.00	2.71	0.49	0.90	0.71–0.97
Item 4	2.71	0.49	0.90	0.71–0.97	3.00	0.00	1.00	0.85–1.00	2.86	0.38	0.95	0.77–0.99
Item 5	3.00	0.00	1.00	0.85–1.00	2.71	0.49	0.90	0.71–0.97	3.00	0.00	1.00	0.85–1.00

TABLE 2 Descriptive statistics and Polychoric correlations of the E-DTi items.

Items	M	SD	g1	g2	1	2	3	4	5
Item 1	3.02	0.98	0.03	-0.06	-				
Item 2	2.52	1.01	0.32	-0.19	0.45	-			
Item 3	2.00	0.99	0.77	-0.01	0.30	0.57	-		
Item 4	1.81	1.00	1.16	0.76	0.29	0.53	0.79	-	
Item 5	2.22	1.01	0.52	-0.24	0.27	0.52	0.69	0.71	-

M, Media; SD, Standard deviation; g1, asimetría, g2, Kurtosis.

TABLE 3 Goodness of fit indices of the original model.

Model	χ^2	gl	CFI	TLI	RMSEA	SRMR
Original Model	6.17*	4	0.998	0.996	0.023	0.010

CFI, Comparative Fit Index, TLI, Tucker Lewis Index, RMSEA, Root Mean Square Error of Approximation, SRMR, Standardized Root Mean Square Residual. * $p < 0.050$.

analyses through the CFA showed adequate fits with satisfactory factor loads, confirming the unidimensional structure reported by similar instruments (Xu et al., 2020; Carranza et al., 2022). Finally, the reliability of the questionnaire was analyzed and an omega coefficient of 0.86 was found, which meets the recommended reliability criterion (Domínguez-Lara et al., 2015).

Additionally, the results of the study indicate that the adaptation carried out in Peru was adequate, and that a valid instrument has been developed to measure distractors in research tasks among Peruvian university students. This is due to the excessive use of the internet by students (Mendoza, 2018) and a trend reported worldwide (Calderwood et al., 2014; Dontre, 2021). Moreover, the presented instrument is a key tool for educational research and intervention, as there are no similar questionnaires that identify potential distractors at the time of conducting research. Unlike other instruments that measure academic distraction (Deepa et al., 2022), this questionnaire is specifically applied to the Peruvian context.

Another important finding is that the original psychometric study (Carranza et al., 2022) did not report the presence of measurement invariance. Therefore, this is the first study to evaluate the ability to make significant comparisons between groups with the E-DTi scale. Furthermore, the results suggest that the unifactorial structure of the scale is equivalent (or invariable) in two different subsamples of men and women, indicating that the

TABLE 4 Standardized factor loadings of the confirmatory factor analysis solution for the final model.

Ítems	λ
1. Mi mente se dispersa mientras realizo tareas de investigación (redactar un proyecto de investigación, tesis, artículo científico, ensayo, etc.).	0.31
2. Inicio conversaciones en mis redes sociales que no guardan relación con las tareas de investigación.	0.59
3. Dejo de hacer las tareas de investigación para ver mi programa de televisión favorito	0.85
4. Dejo de realizar las tareas de investigación para jugar videojuegos	0.83
5. Interrumpo las tareas de investigación para enviar o recibir mensajes de texto	0.75
Coefficiente Omega (ω)	0.86

E-DTi has a consistent factorial structure and is similarly interpreted in both groups.

In terms of the validity of the instrument in relation to other variables, an inverse and statistically significant relationship has been found with the dimensions of academic engagement that measure academic commitment. These relationships are consistent with the findings of previous studies carried out with university students, especially in relation to the use of online distractors such as social networks or the internet (Feng et al., 2019; Nema et al., 2023). In the Peruvian case, a high use of these distractors has been reported (Guillén, 2019). Furthermore, the E-DTi also measures indicators of mental distractors (Ozawa et al., 2022), distractors in television programs (Corkin et al., 2021), video games (Madhan et al., 2012) and text messages (Göl et al., 2023). Aside from these interesting findings, it is striking that a direct correlation with the variable of academic procrastination was not found, which was proposed in order to generate evidence of convergent validity. This is particularly notable because previous studies have found results to assume that procrastination behaviors precede the problematic use of some non-conventional distractors like mobile phones (Hong et al., 2021). However, this result could be explained as an expected consequence, given the change in context from the original scale, from academic tasks to more specialized research tasks.

Despite the interesting results of this research, there are some limitations. The sample consists of only Peruvian university

TABLE 5 Measurement invariance of the model according to sex.

Invariance model	χ^2	gl	CFI	RMSEA	SRMR	Δ CFI	Δ RMSEA	Δ SRMR	
Sex									
	Configural	27.62**	10	0.986	0.059	0.045	–	–	–
	Equal thresholds	28.93**	14	0.988	0.046	0.046	0.002	0.013	0.001
	Equal loadings an thresholds	124.77**	18	0.942	0.109	0.054	0.046	0.063	0.008

CFI, Comparative Fit Index; RMSEA, Root Mean Square Error of Approximation; SRMR, Standardized Root Mean Square Residual. ** $p < 0.01$; * $p < 0.050$.

TABLE 6 Means, standard deviation, and correlations between the scales.

Scales	Mean	SD	1	2
E-DTi	11.57	3.74	1	
EPA	42.01	8.05	0.056	1
UWES-S9	46.25	13.65	–0.201**	0.548**

students, so the results cannot be generalized to other countries. In addition, the findings come from a self-report measure, so there is a risk of source bias. However, the findings of this study will be of great help to university education professionals in addressing problems related to research task distractions. The research task distraction scale was applied to a large sample of participants from the three geographical regions of Peru, which will allow for an exhaustive evaluation of the distractions affecting students during research activities, as evidenced in the literature (Romaní-romaní and Gutiérrez, 2022).

Education professionals can investigate the relationships between these distractions and procrastination, satisfaction with studies, academic engagement, academic self-efficacy, among other aspects. Interventional programs can also be developed to help students mitigate the effects of distraction during research activities (Cubero Vásquez, 2014).

5. Conclusion

This study reports that the E-DTi applied to Peruvian university students demonstrates adequate psychometric properties, making it an interesting alternative to explore factors that limit student scientific production. Due to the clarity, relevance, and representativeness of the five items, it ensures an accurate assessment of the presence of unconventional distractions that interfere with research tasks. Given its internal structure, this scale is presented as a brief and easily applicable measure for students in health sciences, social sciences, business, and engineering fields. Furthermore, its reliability level ensures that we can trust the obtained results. However, further research is still necessary to implement other types of evidence, such as measurement invariance or test sensitivity using modern methods like Item Response Theory. To achieve this, it will be necessary to include students from different departments in Peru and other Latin American countries with similar sociodemographic characteristics. It is crucial to have supportive tools for university research management.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by the Ethics Committee of a Peruvian University (No. 134-2022/PD-USS). The patients/participants provided their written informed consent to participate in this study.

Author contributions

OM-B, JZ, OV, and FG were involved in the conception and design of the experiments, performance of the experiments, analysis and interpretation of the data, and writing of the paper. WM-G and JC provided reagents, materials, analysis tools, or data and also contributed to the writing of the paper. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that there was no commercial or financial relationship that could present a potential conflict of interest during the conduct of the research.

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References

- Ato, M., López, J. J., and Benavente, A. (2013). A classification system for research designs in psychology. *Anales de Psicología* 29, 1038–1059. doi: 10.6018/analesps.29.3.178511
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research (2nd ed.)*. The Guilford Press.
- Calderwood, C., Ackerman, P. L., and Conklin, E. M. (2014). What else do college students “do” while studying? An investigation of multitasking. *Comp. Educ.* 75, 19–29. doi: 10.1016/j.compedu.2014.02.004
- Carranza, R. F., Mamani-Benito, O., Sarria-Arenaza, F., Meza-Villafranca, A., Paula Alfaro, A., and Langan, S. K. (2022). Translation and validation of the online homework distraction scale for Peruvian university students. *Front. Educ.* 7, 1–7. doi: 10.3389/feduc.2022.793151
- Carvajal Tapia, A. E., and Carvajal Rodríguez, E. (2018). Análisis bibliométrico de la participación estudiantil en publicaciones de artículos científicos en revistas de ciencias de la salud indexadas en SciELO Bolivia, periodo 2010–2016. *Gac. Med. Bol.* 41, 31–35. doi: 10.47993/gmb.v41i1.149
- Castro-Rodríguez, Y., and Pares-Ballasco, J. (2022). Actividades académicas, investigativas y de difusión de las Sociedades Científicas de Estudiantes de Odontología en el Perú de the Scientific Societies of Dental. *Odontología Sanmarquina* 25:e22689. doi: 10.15381/os.v25i2.22689
- Castro-Rodríguez, Y., and Pares-Ballasco, J. G. (2022). Actividades académicas, investigativas y de difusión de las Sociedades Científicas de Estudiantes de Odontología en el Perú. *Odontología Sanmarquina* 25:e22689. doi: 10.15381/os.v25i2.22689
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Struct. Equ. Model.* 14, 464–504. doi: 10.1080/1070510701301834
- Corkin, M. T., Peterson, E. R., Henderson, A. M. E., Waldie, K. E., Reese, E., and Morton, S. M. B. (2021). Preschool screen media exposure, executive functions and symptoms of inattention/hyperactivity. *J. Appl. Dev. Psychol.* 73:101237. doi: 10.1016/j.appdev.2020.101237
- Cubero, K. (2014). La tarea académica inteligente: valioso componente en la mediación del proceso de aprendizaje. *InterSedes: Revista de Las Sedes Regionales* 16, 31–45.
- Cubero Vásquez, K. V. (2014). La tarea académica inteligente: valioso componente en la mediación del proceso de aprendizaje. *InterSedes* 15, 31–45. doi: 10.15517/isucr.v15i32.17794
- Deepa, V., Sujatha, R., and Baber, H. (2022). Moderating role of attention control in the relationship between academic distraction and performance. *High. Learn. Res. Commun.* 12, 64–80. doi: 10.5590/HLRC.2022.v12i1.1285
- DeLa Cruz-Vargas, J. A., Correa-Lopez, L. E., Alatriza-Gutierrez de Bambaren, M. d. S., Sanchez Carlessi, H. H., Luna Muñoz, C., Loo Valverde, M., et al. (2019). Promoviendo la investigación en estudiantes de Medicina y elevando la producción científica en las universidades: experiencia del Curso Taller de Titulación por Tesis. *Educación Médica* 20, 199–205. doi: 10.1016/j.edumed.2018.06.003
- Domínguez-Lara, S. A., Merino-Soto, C., Domínguez-Lara, S., and Merino-Soto, C. (2015). ¿Por qué es importante reportar los intervalos de confianza del coeficiente alfa de Cronbach? *Revista Latinoamericana de Ciencias Sociales, Niñez y Juventud* 13, 1326–1328.
- Domínguez-Lara, S. A., Sánchez-Villena, A. R., and Fernández-Arata, M. (2020). Psychometric properties of the UWES-9S in Peruvian college students. *Acta colombiana de psicología: revista de la Facultad de Psicología, Universidad Católica de Colombia* 23, 7–39. doi: 10.14718/ACP.2020.23.2.2
- Dontre, A. J. (2021). The influence of technology on academic distraction: a review. *Hum. Behav. Emerg. Technol.* 3, 379–390. doi: 10.1002/hbe2.229
- Durán-Aponte, E., and Pujol, L. (2013). Manejo del tiempo académico en jóvenes que inician estudios en la Universidad Simón Bolívar. *Rev. Latinoam. Cienc. Soc. Niñez Juv* 11, 93–108. doi: 10.11600/1692715x.1115080812
- Feng, S., Wong, Y. K., Wong, L. Y., and Hossain, L. (2019). The internet and Facebook usage on academic distraction of college students. *Comp. Educ.* 134, 41–49. doi: 10.1016/j.compedu.2019.02.005
- Glass, R. I., Garcia, P. J., Belter, C. W., Livinski, A. A., and Leon-Velarde, F. (2018). Rapid growth of biomedical research in Peru. *Lancet Glob. Health* 6, e728–e729. doi: 10.1016/S2214-109X(18)30234-1
- Göl, B., Özbek, U., and Horzum, M. B. (2023). Digital distraction levels of university students in emergency remote teaching. *Educ. Inf. Technol.* doi: 10.1007/s10639-022-11570-y
- Goyanes, M., and Rodríguez-Gómez, E.-F. (2018). ¿Por qué publicamos? Prevalencia, motivaciones y consecuencias de publicar o perecer. *El Profesional de La Información* 27:548. doi: 10.3145/epi.2018.may.08
- Gualdrón, C., Castillo, J., and Calderon, L. (2019). ¿Es significativa la participación de estudiantes de pregrado en las revistas médicas colombianas indexadas? *Revista de La Facultad de Ciencias de La Salud* 21, 38–40. doi: 10.47373/rfcs.2019.v21.1376
- Gualdrón Frías, C. A., Castillo Cabellos, J. M., and Calderón Nossa, L. T. (2019). ¿Es significativa la participación de estudiantes de pregrado en las revistas médicas colombianas indexadas? *Revista de La Facultad de Ciencias de La Salud Universidad Del Cauca* 21, 38–40. doi: 10.47373/rfcs.2019.v21.1376
- Guillén, O. B. (2019). Uso de redes sociales por estudiantes de pregrado de una facultad de medicina en Lima. *Perú. Revista Médica Herediana* 30, 94–99. doi: 10.20453/rmh.v30i2.3550
- Hall, A., Lineweaver, T., Hogan, E., and O'Brien, S. (2020). On or off task: the negative influence of laptops on neighboring students' learning depends on how they are used. *Comput. Educ.* 153:103901. doi: 10.1016/j.compedu.2020.103901
- Hong, W., Liu, R., Ding, Y., Jian, S., Yang, X., and Sheng, X. (2021). Academic procrastination precedes problematic mobile phone use in Chinese adolescents: a longitudinal mediation model of distraction cognitions. *Addict. Behav.* 121:106993. doi: 10.1016/j.addbeh.2021.106993
- Jorgensen, T. D., Pornprasertmanit, S., Schoemann, A. M., and Rosseel, Y. (2018). *semTools: useful tools for structural equation modeling*. R package version 0.5–1.
- Kline, R. B. (2015). *Principles and practice of structural equation modeling (4th)*. New York City: The Guilford Press.
- Liao, C., and Wu, J. (2022). Deploying multimodal learning analytics models to explore the impact of digital distraction and peer learning on student performance. *Comput. Educ.* 190:104599. doi: 10.1016/j.compedu.2022.104599
- Madhan, B., Kumar, C. S., Naik, E. S., Panda, S., Gayathri, H., and Barik, A. K. (2012). Trait procrastination among dental students in India and its influence on academic performance. *J. Dent. Educ.* 76, 1393–1398. doi: 10.1002/j.0022-0337.2012.76.10.tb05397.x
- Magariño-Abreus, L. R., Echevarría-Regojo, L., Rivero-Morey, R. J., and Ramos-Rangel, Y. (2021). Percepción sobre investigación científica en estudiantes de estomatología. *Univ. Med. Pinar del Rio* 17:e737
- McDonald, R. P. (1999). *Test theory: a unified treatment*. Milton Park: Taylor & Francis.
- Mendoza, J. R. (2018). Uso excesivo de redes sociales de internet y rendimiento académico en estudiantes de cuarto año de la carrera de psicología UMSA. *Educación Superior* 5, 57–70.
- Nema, P., Srivastava, R., Bhalla, R., and Chakarboty, A. (2023). Impact of social media distraction on student evaluation of teacher effectiveness. *Int. J. Educ. Manag.* doi: 10.1108/IJEM-10-2022-0389
- Ozawa, S., Yoshimoto, H., Okanoya, K., and Hiraki, K. (2022). Emotional distraction by constant finger tapping. *J. Psychophysiol.* 36, 118–134. doi: 10.1027/0269-8803/a000287
- Perdomo, B., and Morales, O. A. (2022). Errores y dificultades en la elaboración de las tesis de pre y postgrado del estudiantado peruano: implicaciones pedagógicas. *Revista Electronica Educare* 26, 1–21. doi: 10.15359/ree.26-1.21
- Picado Juárez, A. M., Valenzuela Flores, D. J., and Peralta Calderón, Y. I. (2017). Los medios distractores en el aula de clase. *Univ. Cienc.* 8, 51–59. doi: 10.5377/uyc.v8i13.4538
- Ramos-Galarza, C., Jadán-Guerrero, J., Paredes-Núñez, L., Bolaños-Pasquel, M., and Gómez-García, A. (2017). Procrastinación, adicción al internet y rendimiento académico de estudiantes universitarios ecuatorianos. *Estudios Pedagógicos* 43, 275–289. doi: 10.4067/S0718-07052017000300016
- Raykov, T., and Hancock, G. R. (2005). Examining change in maximal reliability for multiple-component measuring instruments. *Br. J. Math. Stat. Psychol.* 58, 65–82. doi: 10.1348/000711005X38753
- Romani-romani, F., and Gutiérrez, C. (2022). Experiencia, actitudes y percepciones hacia la investigación científica en estudiantes de Medicina en el contexto de una estrategia curricular de formación de competencias para investigación. *Educación Médica* 23:100745. doi: 10.1016/j.edumed.2022.100745
- Rosseel, Y. (2012). Lavaan: an R package for structural equation modeling. *J. Stat. Softw.* 48, 1–93. doi: 10.18637/jss.v048.i02
- RStudio Team. (2018). *RStudio: integrated development environment for R*. Boston: RStudio, Inc.
- Schumacker, R. E., and Lomax, R. G. (2015). *A Beginner's guide to structural equation modeling: 4th*. London: Routledge.
- Soto, C. (2020). Factores asociados a la elaboración de tesis en la Universidad Nacional de Asunción. *Paraguay. Actualidades Investigativas En Educación* 20, 1–24.
- SUNEDU. (2019). Sobre el trabajo de investigación para obtener el grado de bachiller y la tesis para el título profesional. Retrieved at: <https://www.sunedu.gob.pe/sobre-trabajo-investigacion-para-obtener-grado-bachiller-tesis-para-titulo-profesional/> (Accessed January 10, 2023).
- Taxt, R. E., Robinson, D. K. R., Schoen, A., and Fløysand, A. (2022). The embedding of universities in innovation ecosystems: the case of marine research at the University of Bergen. *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography* 76, 42–60. doi: 10.1080/00291951.2022.2041718

Turpo-Gebera, O., Quispe, P. M., Paz, L. C., and Gonzales-Miñán, M. (2020). La investigación formativa en la universidad: sentidos asignados por el profesorado de una Facultad de Educación. *Educ. Pesqui.* 46, 1–19. doi: 10.1590/s1678-4634202046215876

Ventura-León, J. (2022). Back to content-based validity. *Adicciones* 34, 323–325. doi: 10.20882/adicciones.1213

Wu, J., and Cheng, T. (2019). Who is better adapted in learning online within the personal learning environment? Relating gender differences in cognitive attention

networks to digital distraction. *Comput. Educ.* 128, 312–329. doi: 10.1016/j.compedu.2018.08.016

Xu, J. (2015). Investigating factors that influence conventional distraction and tech-related distraction in math homework. *Comp. Educ.* 81, 304–314. doi: 10.1016/j.compedu.2014.10.024

Xu, J., Núñez, J. C., Cunha, J., and Rosário, P. (2020). Online homework distraction scale: a validation study. *Psicothema* 32, 469–475. doi: 10.7334/psicothema2020.60

Appendix

English-Spanish version of the E-DTi.

1. Never/Nunca
2. Almost never/Casi nunca
3. Sometimes/A veces
4. Almost always/Casi siempre
5. Always/Siempre

Ítems	1	2	3	4	5
1. My mind wanders while I am doing research tasks (writing a research project, thesis, scientific paper, essay, etc.). / <i>Mi mente se dispersa mientras realizo tareas de investigación (redactar un proyecto de investigación, tesis, artículo científico, ensayo, etc.).</i>					
2. I start conversations on my social networks that have nothing to do with the research tasks. / <i>Inicio conversaciones en mis redes sociales que no guardan relación con las tareas de investigación.</i>					
3. I stop doing the research tasks to watch my favorite TV show. / <i>Dejo de hacer las tareas de investigación para ver mi programa de televisión favorito.</i>					
4. I stop doing the research tasks to play video games. / <i>Dejo de realizar las tareas de investigación para jugar videojuegos.</i>					
5. I interrupt the research tasks to send or receive text messages. / <i>Interrumpo las tareas de investigación para enviar o recibir mensajes de texto.</i>					