Transfer of learning factors model applied to in-service teachers of early childhood care and education in Puebla, Mexico

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Abstract

Research has shown that early childhood care and education (ECCE) can improve children's development. Training of in-service teachers is a good strategy to maximize the quality of ECCE, but in Mexico, teachers consider that in-service training is not particularly relevant. To counter this tendency, The Mexican Educational System designed and implemented an in-service training policy. The aim of this study was to analyse the impact of individual factors on learning transfer during the COVID-19 pandemic. It followed a longitudinal, non-experimental design. Two instruments were applied at different times. In May 2021, during the COVID-19 lockdown, the Puebla Ministry of Education offered five online courses aimed at early childhood and preschool teachers. 6,562 teachers enrolled, but only 2,865 successfully completed the courses. Upon completion of the courses, we applied the transfer of learning factors model (Quesada-Pallarès et al., 2018). The model predicted that teachers devise plans and strategies for applying the contents learned, guided by their own desire to transfer. In this regard, it might be asserted that the will to transfer is steered by teachers' autonomous drive to transfer.

Keywords: computer assisted learning; professional learning; motivation; professional development; early childhood education; transfer of learning

Resum. *El model de transferència de factors d'aprenentatge aplicat a docents en servei d'atenció i educació de la primera infància a Puebla, Mèxic*

Les investigacions han demostrat que l'atenció i l'educació de la primera infància (AEPI) poden millorar el desenvolupament dels infants. La formació de docents en servei és una bona estratègia per maximitzar la qualitat de l'AEPI, però a Mèxic els docents consideren que la formació en servei no és particularment rellevant. Per contrarestar aquesta tendència, el Sistema Educatiu Mexicà va dissenyar i implementar una política de formació en servei. L'objectiu de l'estudi era analitzar l'impacte dels factors individuals en la transferència de l'aprenentatge durant la pandèmia de la COVID-19. Es va utilitzar un disseny longitudinal no experimental i es van fer servir dos instruments que es van aplicar en dos moments diferents. El maig de 2021, durant el confinament per COVID-19, el Ministeri d'Educació de Puebla va oferir cinc cursos en línia dirigits a docents d'educació infantil. S'hi van inscriure 6.562 docents i només 2.865 van completar amb èxit els cursos. En acabar els cursos, es va aplicar el model de transferència de factors d'aprenentatge (Quesada-Pallarès et al., 2018). El model preveu que els docents dissenyin plans i estratègies per aplicar els continguts apresos guiats pel seu propi desig de transferir. En aquest sentit, es pot afirmar que la voluntat de transferència està dirigida per l'impuls autònom de transferència dels docents.

Paraules clau: aprenentatge assistit per ordinador; aprenentatge professional; motivació; desenvolupament professional; educació de la primera infància; transferència d'aprenentatge

Resumen. *El modelo de transferencia de factores de aprendizaje aplicado a docentes en servicio de atención y educación de la primera infancia en Puebla, México*

Las investigaciones han demostrado que la atención y la educación de la primera infancia (AEPI) pueden mejorar el desarrollo de los niños. La formación de docentes en servicio es una buena estrategia para maximizar la calidad de la AEPI, pero en México los docentes consideran que la formación en servicio no es particularmente relevante. Para contrarrestar esta tendencia, el Sistema Educativo Mexicano diseñó e implementó una política de formación en servicio. El objetivo del estudio fue analizar el impacto de los factores individuales en la transferencia del aprendizaje durante la pandemia de la COVID-19. Se siguió un diseño no experimental longitudinal utilizando dos instrumentos con diferentes momentos de aplicación. En mayo de 2021, durante el confinamiento por COVID-19, el Ministerio de Educación de Puebla ofreció cinco cursos en línea dirigidos a docentes de educación inicial y preescolar. Se inscribieron 6.562 docentes y solo 2.865 completaron con éxito los cursos. Al finalizar los cursos, se aplicó el modelo de transferencia de factores de aprendizaje (Quesada-Pallarès et al., 2018). El modelo prevé que los docentes diseñen planes y estrategias para aplicar los contenidos aprendidos guiados por su propio deseo de transferir. En este sentido, podría afirmarse que la voluntad de transferencia está dirigida por el impulso autónomo de transferencia de los docentes.

Palabras clave: aprendizaje asistido por ordenador; aprendizaje profesional; motivación; desarrollo profesional; educación de la primera infancia; transferencia de aprendizaje

Summary

1. Introduction

In Latin America and the Caribbean, there are many and diverse social inequalities. These inequalities begin in early childhood (Villaseñor, 2019). For instance, the knowledge and skills of children from poor socioeconomic backgrounds are very different to those of children whose parents have higher incomes. Research has shown that early childhood care and education (ECCE) can improve children's development (Shonkoff, 2017; Melhuish & Gardiner, 2019). High-quality ECCE supports children to achieve positive outcomes in adulthood. According to Neuman & Roland (2019):

> Improving the quality of early childhood experiences depends on strengthening the skills, professional development and employment conditions of those who work with young children. Yet often early childhood workers are undervalued, underpaid and inadequately prepared. (p. 59)

Improving the quality of early childhood experiences requires improving the education of early childhood workers. For example, Feriver et al. (2016) proposed implementing transformative learning techniques; that is, experiences for students to critically question their viewpoints and suppositions, to appraise the background through which they interpret their world, in a context of sustainability, to "provide educators and teachers with opportunities to critique and change conventional approaches to early childhood education (ECE) teaching and learning" (p. 741).

ECC educators are interested in "training that addresses real-life issues that resonate with their daily classroom experiences, and online instruction that is both engaging and convenient" (Barnes et al., 2018, p. 127). In-training and in-service ECCE educators have emphasised the importance of using information and communication technologies to improve teaching practices (Pérez-Jorge et al., 2020). This is still a pending task in developing countries. Chaves Pereira (2019) asserts that the initial training of ECCE at university level does not yet cover all the specificities of pedagogical practice, since it is not clear how children develop. As a result, ECCE educators do not understand that childhood learning occurs in an integrated way.

In Mexico, there are two levels of ECCE: initial education (0 to 3 years old) and pre-school (3 to 5 years old). Mexico faces the challenge of expanding ECCE coverage and improving the quality of care, since low-quality care services do not contribute to child development, and can be harmful to them, their families and their communities (Araujo et al., 2017).

Training of in-service teachers is a good strategy to maximize the quality of ECCE in Mexico. However, Mexican teachers consider that in-service training is not particularly relevant (Borja et al., 2009; Peña & Ochoa, 2012; Rodríguez & Vera, 2007). This can be evidenced by the low academic performance of the students. When teachers are not updated with advanced strategies for teaching, their practice is negatively affected, which is considered a factor causing educational lagging (Quesada-Pallarès et al., 2018).

The Mexican educational system has designed and implemented an in-service training policy. Before this policy, professional development was not a top priority for teachers. Later they realized that training is necessary to achieve high-quality education (Aguilar, 2011; Buchberger et al., 2000). The decision was made to offer teachers the elements for improving their professional performance and the educational system itself (Quesada-Pallarès et al., 2018).

Training encourages teachers to develop their knowledge, skills and attitudes (Ciraso, 2012; Agyei & Voogt, 2014; Dreer et al., 2017; Quesada-Pallarès et al., 2018); applying the skills acquired in training to their workplace – learning transfer – has a positive impact both on the children they teach (Chew & Cerbin, 2021) and on the community (Saha, 2021). Little research has been conducted regarding the factors that hinder or foster learning transfer in the field of ECCE teacher training (Pineda et al., 2011).

General literature on learning transfer shows that individual factors are key for ensuring transfer (Quesada-Pallarès et al., 2022). Besides other factors, a trainee's motivation (Fandos et al., 2017; Gegenfurtner, 2013), commitment to transfer (Quesada-Pallarès & Gegenfurtner, 2015), school involvement (Quesada-Pallarès et al., 2018) and predisposition to change (Quesada-Pallarès et al., 2018) determine the occurrence of transfer.

In Mexico, face-to-face teaching was suspended in March 2020 to help prevent the further spread of COVID-19. Teaching began to take place online. In May, the Puebla Ministry of Education offered five online courses aimed at ECCE. Participation in the courses was voluntary. Even though 6,562 teachers enrolled, only 2,865 successfully completed the courses. The courses were held on "Early Childhood Puebla", a digital platform developed by an interdisciplinary team from the Benemérita Universidad Autónoma de Puebla and financed by the Mixed Fund CONACYT - government of the state of Puebla. This platform promotes and favours the integral development of children younger than four years old living in the state of Puebla. The courses were based on the child rights approach, and were delivered by experts in their field from public and private agencies that provide ECCE services in the state of Puebla. The Ministry of Education of the state of Puebla coordinated the courses.

Upon completion of the courses, several questions relating to learning transfer arose: To what extent did in-service teachers transfer their learning to their workplace? To what extent and how did the COVID-19 situation allow them to transfer? What individual factors influenced the learning transfer process?

To answer these questions, we applied the transfer of learning factors model and its tools, developed by Quesada-Pallarès et al. (2018), to a sample of Mexican teachers who had completed the courses, even though the model has not been tested on online training. Due to the complex situation generated by the pandemic, we decided to focus on individual factors only. Most of the teachers were still working remotely when this study was conducted.

The aim of the study was to analyse the impact of individual factors on learning transfer during the COVID-19 pandemic. Based on this aim and

on the literature, we formulated our hypothetical model, which assumes structural and causal relationships among the individual factors and learning transfer, adding implementation intentions as a mediator (see Figure 1).

Figure 1. Structural Equation Model hypothesized
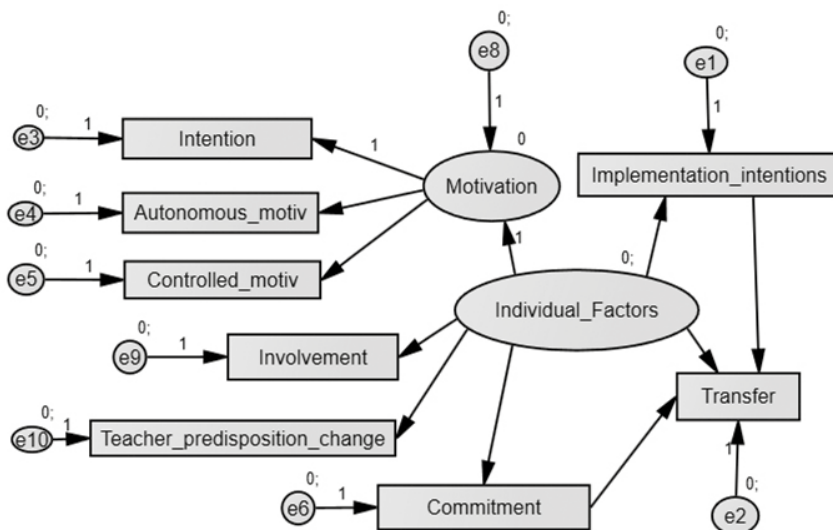
Source: Own elaboration.

2. Materials and methods

2.1. Procedure

This study employed a longitudinal, non-experimental design using quantitative methodology. Two instruments were applied: one at the end of the training course (t1); and the second three months later (t2). Training courses were delivered online from May to June 2020. The instrument at t1 was applied in June 2020 to those who had successfully completed the training course. The instrument at t2 was applied in November 2020, allowing three months for trainees to transfer learning to their workplace. The t2 instrument was sent to everyone who had responded to the t1 instrument, and online reminders were sent 10 days after the first announcement. We used the OneDrive platform to send out the questionnaires; participation was voluntary, none of the participants received any payment, and they could withdraw at any time.

Training courses aimed at early childhood and preschool teachers were offered by the Puebla's Ministry of Education. Trainers were university teachers with recognized experience in this area.

2.2. Participants

A total of 6,562 Mexican early-childhood public school teachers enrolled in the training courses, but only 2,865 successfully completed them (43.7%). Of these 1,101 responded to the first questionnaire (t1=38%) and only 394 responded to the second questionnaire (t2=35.8%). We used a non-probabilistic, intentional sampling method, sending the first questionnaire to those who had successfully finished the course.

Four different training courses were offered: "Scientific bases of early childhood development", "Training great readers from an early age", "Voices that read and feed exchanges", and "Education with a gender perspective". Considering only the sample who completed both t1 and t2 (n=394), trainers participated mostly in "Scientific bases of early childhood development" (52.8%). In total, 95.4% were female (preschool teachers, 48.7%, and early childhood teachers, 28.7%). 64.2% had a degree, and their job at the time of responding to the t2 questionnaire was the same as when they did the training (91.1%). Table 1 gives some descriptive statistics.

Table 1. Characteristics of the sample (N=394)

Characteristics		N. (%)
Gender	Men	18 (4.6)
	Women	376 (95.4)
Role	Pedagogical technical advisor	7 (1.8)
	Educational assistant	15 (3.8)
	CATEP	2 (.5)
	Initial Education Director	8 (2.0)
	Preschool Director	27 (6.9)
	Special education teacher	18 (4.6)
	Initial education teacher	113 (28.7)
	Preschool teacher	192 (48.7)
	Community education visitor	5 (1.3)
	School supervisor	7 (1.8)
Last degree obtained	Elementary school	6 (1.5)
	High school	3 (.8)
	Upper-middle education	44 (11.2)
	Undergraduate	253 (64.2)
	Master's degree	87 (22.1)
	Doctorate	1 (.3)

(Continued on next page)

Characteristics		N. (%)
Current employment	I have the same job as when I did the training	359 (91.1)
	I changed my workplace, but I continue to perform the same functions	30 (7.6)
	I lost my job as a result of the pandemic	3 (.8)
	Scholarship	2 (.5)
Courses	Scientific bases of early childhood development	208 (52.8)
	Training great readers from an early age	44 (11.2)
	Voices that read and feed exchanges	61 (15.5)
	Education with a gender perspective	81 (20.6)

Source: Own elaboration.

2.3. Instruments

The main tool used in this study was the questionnaire. Following the model described by Quesada-Pallarès et al. (2018), we adapted the two instruments by adding some items about the socio-demographic nature of the trainees.

The questionnaire of transfer factors (QTF) was used as a t1 measure. It included five items specifying the teachers' socio-demographic grouping: age, gender, role, years of experience, and level of studies. These items were different depending on the type of information requested, but were mainly dichotomous multiples with only one answer, or short open-ended questions. The QTF also included a set of 64 items corresponding to the model's factors. Nonetheless, in this paper we only present the individual factors surveyed. This consists of 30 items and 6 factors: *intention to transfer, autonomous motivation, controlled motivation, commitment to transfer, school improvement,* and *teacher predisposition to change.* Table 2 shows the names and definitions of the factors, and an example for each factor; it also gives the reliability scores in its first application. Items were measured using a 5-point Likert scale (1: *not agree at all*; 5: *totally agree*).

The Transfer Questionnaire (TQ) was applied as a t2 instrument. It included a first question to find out whether the respondents were still working at the same institution in November 2020 as when they had finished the training course (multiple-choice item). We were aware that because of lockdown, a lot of teachers were either unable to work or lost their jobs, so we wanted to ensure that teachers had the means to apply their learning to the workplace. Two factors were included in the TQ: *transfer of learning* (6 items) and *implementation intentions* (9 items). *Transfer of learning* referred to the degree to which the trainee was able to apply the learning acquired in training to their workplace. *Implementation intentions* explored the trainee's intentions (i.e. plans, actions taken) to implement what they had learned in training at their workplace. This factor acquired particular importance during the pandemic, when most of the teachers were not able to physically return to their workplace and had to change their traditional way of working. The *implementation intentions* factor

Table 2. Description of the instruments used in the study

Instrument	Factor	Definition and sources	Alpha	# of items	Item example
Question-naire of Transfer Factors	Intention to transfer	Trainees' will or predisposi-tion to develop transfer actions that allow them to execute a specific plan to apply their learning (Gegen-furtner, 2013)	.885*	5	I feel able to use the training con-tent at work
	Autonomous motivation	Trainees' internalized desire to transfer that was initiative and governed by the self (Gegenfurtner, 2013, p. 189)		4	While applying training at work, I can learn a lot
	Controlled motivation	Trainees' desire to transfer which was not initiated and governed by the self (Gegenfurtner, 2013, p. 189)		4	My supervisor will probably appreci-ate successful training applica-tion (e.g. through praise)
	Commitment to transfer	Trainees' commitment to behavioural intentions and implementation intentions that will lead to transfer (Quesada-Pallarès, 2014)	.908	5	I am willing to do the necessary to apply what I have learnt in training to my teaching practice
	School involvement	Degree to which teachers are involved in innovation activities conducted by their school (Ciraso, 2012)	.909	6	I feel responsible for my school's improvement
	Teacher pre-disposition to change	The extent to which teachers are eager to change their teaching practices as well as to promote change in school (Ciraso, 2012)	.918	7	I am in favour of reviewing my teaching practice
Transfer Question-naire	Transfer of learning	Knowledge, skills and atti-tudes learned in training that are applied to their work-place. (Ciraso, 2012; Pineda-Herrero et al., 2014)	.942	6	I have applied in my classroom what I learned in training
	Implementa-tion intentions	Trainees' conscious goals and plans to achieve the desired aim, which is learn-ing transfer (Quesada-Pal-larès, 2014)			I have analysed how I can suc-cessfully apply, in my workplace, what I learned in training

Note: *Quesada-Pallarès et al. (2018) grouped these three factors into a single factor, titled 'motivation to transfer'. We decided to separate them.

Source: Own elaboration.

was based on Quesada-Pallarès (2014) (see Table 1). Items were measured using a 5-point Likert scale (1: *not agree at all*; 5: *totally agree*). The TQ was sent via email three months after trainees had completed the t1 questionnaire. They had ten days to answer and a reminder was sent on the seventh day.

2.4. Statistical analysis

To compare average scores in independent groups, we used parametric tests – after testing normality of the variables – (One-factor ANOVAs and Post-hoc tests), using SPSS v.23. Specifically, inferential tests were used to check if there were any differences in the variables depending on the course trainees had participated in. The results of this test would allow us to decide whether to include the variable 'course' as a mediator in our hypothetical model.

The second approach to data analysis was intended to meet the objective of the study and to test our hypothesis. We conducted confirmatory factor analysis (CFA) for the individual factors of the model to test the measurement model. At the same time, we performed exploratory structural equation modelling (ESEM; Asparouhov & Muthén, 2009) to test structural and causal relationships among the factors, and their influence on transfer and implementation intentions, using AMOS v.23. To this end, we adopted the two-step procedure recommended by Anderson and Gerbing (1988) to analyse the transfer of learning factors model (TLF) – Individual Factors (see Figure 1). To examine the fit indices provided by the CFA, we followed the recommendation of Byrne (1994), McDonald and Ho (2002), Steiger (2007), Kenny et al. (2015) and Kline (2015). We used the Maximum Likelihood as the estimating method.

The TLF Individual Factors model consisted of two latent factors and six observed variables: *teacher predisposition to change* (seven items); *school involvement* (six items); *commitment to transfer* (five items); *intention to transfer* (four items); *autonomous motivation* (four items); and *controlled motivation* (four items). The two latent factors were: Motivation to transfer – consisting of *intention to transfer, autonomous motivation and controlled motivation* – as suggested by Gegenfurtner (2013), and Individual Factors, involving six observed variables and motivation to transfer (Figure 1). The fit indices from the eight-factor model were adequate (CFI = .93; TLI = .93; NFI = .92; RMSEA = .057 [.054-.060]). Also, the χ^2 eight-factor obtained a value of 1777.82, p <.001 and df = 390; All of these psychometric properties indicated an acceptable data-model fit (Figure 2).

3. Results

We conducted reliability and descriptive analyses of the TLF Individual Factors model. Table 3 shows the results obtained, adding the dependent variables measured in t2: *transfer of learning* and *implementation intentions*. All scales showed good internal consistency (values above .70). Means of all factors were above 4.00 (much agreed) except for the factors of *controlled motivation, transfer of learning* and *implementation intentions*, which were a bit lower.

There was also significant and positive correlation among all the factors considered in the tested model (Table 3). *Intention to transfer* and *autonomous motivation* achieved the strongest relationship (.720). *Individual Factors* with *transfer* or *implementation intention* had a low correlation.

Table 3. Descriptive, correlational and internal consistency coefficients

Scales	M (SD)	A	1	2	3	4	5	6	7	8
(1) Intention to transfer	4.65 (0.45)	.80	–							
(2) Autonomous motivation	4.71 (0.41)	.85	.720**	–						
(3) Controlled motivation	3.64 (1.01)	.81	.230**	.254**	–					
(4) Commitment to transfer	4.61 (0.50)	.89	.612**	.645**	.268**	–				
(5) School involvement	4.67 (0.44)	.91	.406**	.433**	.178**	.575**	–			
(6) Teacher predisposition to change	4.62 (0.44)	.91	.500**	.524**	.247**	.593**	.692**	–		
(7) Transfer of learning	3.40 (0.71)	.92	.281**	.253**	.134*	.217**	.214**	.177**	–	
(8) Implementation intentions	3.49 (0.70)	.92	.267**	.293**	.142**	.259**	.226**	.212**	.618**	–

Note: M (Mean); SD (Standard Deviation); **Correlation is statically significant at .01 (2 tails)

Source: Own elaboration.

To find out whether the TLF Individual Factors variables were different according to the training course in which teachers participated, we conducted inferential analyses. We only found differences statistically significant in two factors: First, *school involvement* showed F (3, 390) = 3.058, p=.031. Games-Howell post-hoc results indicated that teachers who participated in "Training great readers from an early age" (M=4.80, 95% IC [4.70, 4.90]) had higher school involvement perception than those who participated in "Education with a gender perspective" (M=4.59, 95% IC [4.48, 4.69], p=.019).

Second, *implementation intentions* showed F (3, 390) = 3.053, p=.028. Tukey post-hoc results indicated that teachers who participated in "Voices that read and feed exchanges" (M=3.27, 95% IC [3.10, 3.44]) had lower implementation intentions than those who participated in "Scientific bases of early childhood development" (M=3.54, 95% IC [3.44, 3.64], p=.044), and "Training great readers from an early age" (M=3.63, 95% IC [3.44, 3.82], p=.044).

Inferential tests showed no evidence that TLF Individual Factors and *transfer of learning* were related to the training in which teachers enrolled. This indicates that there were no differences in *transfer of learning* depending on the course teachers participated in.

Finally, we performed an ESEM based on the model of Quesada-Pallarès et al. (2018). The measurement model consisted of two latent factors and eight observed variables (model A). An initial test of the measurement model A did not provide an adequate fit to the data: MLM/MLR $\chi2$ = 81,711; df = 17; p <.001; CFI = .95; TLI = .92; RMSAE = .098 [.078 - .120]; RMR =.016 (see Figure 1). According to the values model fit, model A was not acceptable; thus, the hypothesized model was not adequate.

The modification indices of model A suggested eliminating one variable (*teacher predisposition to change*). The results indicated that the new measurement model B, without the abovementioned variable, improved, as well as the fit to the data, which reached acceptable levels MLM/MLR χ2 = 13.228; df = 11; p <.279; CFI = .99; TLI = .99; RMSAE = .023 [.00-.060]; RMR = .012 (Figure 2).

Figure 2. Structural Equation Model without teacher predisposition to change (model B)
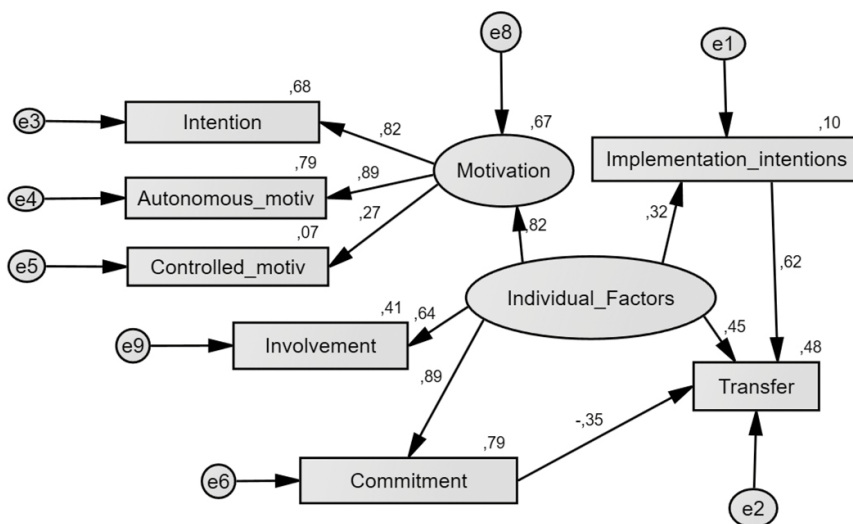
Source: Own elaboration.

The standardized direct effects indicated that there were positive significant relationships for *Individual Factors* with *motivation* (β = 0.82, p<.001), with *school involvement* (β = 0.64, p<.001), with *commitment to transfer* (β = 0.89, p<.001), with *implementation intentions* (β = 0.32, p<.001) and with *transfer of learning* (β = 0.45, p<.05) (Table 4). All these supported the idea that Individual Factors grouped all the factors as a latent variable, except for *teacher predisposition to change*, which was removed from this model.

Moreover, *Motivation* had positive standardized direct effects with *intention to transfer* (β = 0.82, p<.001), with *autonomous motivation* (β = 0.89, p<.001), and with *controlled motivation* (β = 0.27, p<.001). The structure confirms that all three factors are part of a latent variable based on trainees' motivation.

Implementation intentions had a positive standardized direct effect with *transfer of learning* (β = 0.62, p<.001), as suggested by previous studies.

There was a negative significant relationship between *commitment to transfer* and *transfer of learning* (β = -0.35, p<.05). Thus, when the trainee is only committed to transfer but lacks motivation (intention, autonomous or controlled) and involvement of the school, s/he will probably not transfer in the end.

Table 4. Standardized total Effects

	Individual Factors B(ρ)	Commitment to transfer B(ρ)	Motivation B(ρ)	Implementation intentions B(ρ)
Commitment to transfer	.890 (<.001)	.000	.000	.000
Motivation	.820 (<.001)			
Implementation intentions	.317 (<.001)			
School involvement	.638 (<.001)			
Controlled motivation	.220 (<.001)		.269 (<.001)	
Autonomous motivation	.728 (<.001)		.888 (<.001)	
Intention to transfer	.675 (<.001)		.823 (<.001)	
Transfer of learning	.331 (<.001)	-.354 (<.001)		.621(<.001)

Source: Own elaboration.

The indirect effects were decomposed into four components by Individual Factors and the three components of motivation, *intention to transfer* (β = 0.67, p<.001), *autonomous motivation* (β = 0.73, p<.001), and *controlled motivation* (β = 0.22, p<.001), and had a negative indirect effect with *transfer of learning* (β = -0.12, p<.001). The squared multiple correlations between Individual Factors and the different latent variables are *commitment to transfer* (R^2 = .79, <.001), Motivation (R^2 = .67, <.001), *implementation intentions* (R^2 = .10, <.001), *school involvement* (R^2 = .41, <.001), and *transfer of learning* (R^2 = .48, <.001).

Moreover, there was a good level of squared multiple correlation between Motivation and *autonomous motivation* and *intention to transfer* (R^2 = .79, <.001; and R^2 = .68, <.001, respectively), and low correlation with *controlled motivation* (R^2 = .07, <.001). Individual Factors described 39% (p<.001) of the variance in *commitment to transfer*, 10% in *school involvement*, and 12% in *autonomous motivation*; and Motivation described 47% of the variance in *autonomous motivation,* 26% in *intention to transfer*, and 13% in *commitment to transfer*. The findings showed that the components of Individual Factors had a direct effect on Motivation and *implementation intentions*, *school involvement*, *commitment to transfer* and *transfer of learning*; Implementation intentions mediated the relationships between Individual Factors and *transfer of learning;* and *commitment to transfer* mediated the relationship between Individual Factors and *transfer of learning* in a negative way (see Figure 2).

4. Discussion

Our aim was to analyse the impact of individual factors on learning transfer during the COVID-19 pandemic. To this end, the Transfer of Learning Factors Model (Quesada-Pallarès et al., 2018) was applied to a sample of Mexican teachers who attended a series of four on-line courses. The key results are discussed below.

Most teachers were willing to transfer what they had learned during the courses, as shown by Kim & Yu (2020) in analysing teachers' learning transfer in distance education. Model B predicted that these teachers would devise plans and strategies for applying the learned content, guided by their own desire to transfer. In this regard, the will to transfer is steered by teachers' autonomous drive to transfer, as suggested by Gegenfurtner et al. (2016). Nevertheless, teachers show little intention to apply what they have learned. There seems to be a gap of sense between intention and volition theory. Learning transfer is dynamic (Blume et al., 2019) so future studies could explore this approach when measuring learning transfer in ECCE teachers.

Implementation intentions were more evident in those teachers who attended the courses titled "Scientific bases of early childhood development" and "Training great readers from an early age" compared to those who attended the course titled "Voices that read and feed exchanges". Since we did not find evidence of the relationship between the courses, Individual Factors and transfer of learning, the salience of *implementation intention* may be due to some features of each course. Gegenfurtner et al. (2020) claimed that levels of transfer and learning can increase if on-line courses promote greater interaction between trainers and trainees (e.g., polls, discussion boards, different tools such as Zoom), consider including some webinars for content development, and guarantee that webinars will last 90 minutes and allow breaks. Nicklin et al. (2022) recommend the interactivity of teaching and learning if we want commitment from students. Furthermore, the type of transfer could be influenced by a close relationship between course activities and real life (Sala et al., 2019). For instance, in "Scientific bases of early childhood development" participants had to do various practical exercises that might be implemented straight away in the workplace; in other words, the content covered during both this course and "Training great readers from an early age" was closer to the actual work teachers do (Kim & Lee, 2001).

Since there were positive significant relationships between all variables except for the one that was removed, we assume that Individual Factors gathered all the factors as a latent variable. In the same vein, *intention to transfer*, *autonomous motivation*, and *controlled motivation* are part of a latent variable based on participants' motivation to transfer, as Gegenfurtner (2013) confirmed in his study. These three factors are intrinsically related to and are defined by teachers' motivation. Transfer of learning, in the case of teachers who attended the courses, needs the combination of a predisposition to develop transfer actions, the initiative of the participant, the commitment to transfer, the institutional motivation, and the teachers' involvement in innovation activities proposed by their school. Since the pandemic limited the way ECCE teachers worked with students, the individual aspects of the teacher gains more importance, and it seems that transfer of learning depends on their motivation, involvement, commitment and willingness to change their educational practice. The pandemic forced students to change their training format and to

experience challenges such as unfamiliar ways of learning (Nicklin et al., 2022), and it could affect their motivation and commitment to transfer. Gegenfurtner et al. (2016) showed that voluntary or mandatory training can affect transfer and motivation.

This allows a better understanding of the negative significant relationship between *commitment to transfer* and *transfer of learning*. When teachers are committed to transfer but their motivation is low and they are not involved in school innovation activities, their commitment to transfer will fade and they will not transfer what they have learned. In fact, *commitment to transfer* is a relatively new variable studied in the field, and we know little about the role it plays in the learning transfer process. It is an area that needs further exploration, along with the idea of elaboration action plans such as those that Gollwitzer (1993) suggested.

Blume et al. (2019) and Ford et al. (2019) pointed out that learning transfer is a more complex and multidimensional variable – performance, assessment, explanation, instruction and leadership – which needs different instruments to measure it (Pineda-Herrero et al., 2014). Understanding learning transfer as a process that involves dimensions other than performance might help us to understand why some teachers are eager to transfer and elaborate specific implementation plans, whereas others are not.

It is recommended that the Ministry of Education of Puebla implement mechanisms to monitor the results of the training process. One form of monitoring is "study circles", i.e. scheduled meetings where teachers share their transfer experiences. The problem is that due to lockdown, this strategy was suspended. Perhaps the ministry should design an online version of "study circles" to find out if they might function as a socio-pedagogical device for increasing the motivation to transfer.

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