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EXPLORING INDIVIDUAL DIFFERENCES AMONG TEACHERS' ICT ACCEPTANCE: A PATH MODEL AND THE ROLE OF EXPERIENCE

Lucia Monacis
Department of Humanities
University of Foggia
Italy

Pierpaolo Limone
Department of Humanities
University of Foggia
Italy

Flavio Ceglie
Department of Educational Sciences, Psychology, & Communication
University of Bari
Italy

Giancarlo Tanucci
Department of Educational Sciences, Psychology, & Communication
University of Bari
Italy

Maria Sinatra
Department of Educational Sciences, Psychology, & Communication
University of Bari
Italy

Abstract: *This research tested a path model in which constructive beliefs, components of the technological acceptance model, and perceived enjoyment directly and indirectly predicted information and communication technology (ICT) integration into educational practices. We analyzed whether experience played a moderating role in this nomological network of associations. The sample comprised 374 Italian teachers (*Mage = *38.69*, SD = *5.30*, F = *198)* divided into two groups: the first with 20 or fewer years of teaching experience and the second with 21 or more years. They completed a questionnaire comprising a socioanagraphic section and the following scales: the Teacher's Beliefs, the Intrinsic Motivation, the Extrinsic Motivation, the Perceived Ease of Use, the Behavioral Intention to Use Computer and the ICT Class Use. Results showed positive correlations between ICT integration and the variables of interest and generally confirmed the mediated and moderated relationships. Suggestions were provided to enhance a successful ICT integration.*

Keywords: *teachers, hedonic and utilitarian motivation, ICT integration, constructivist beliefs.*

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INTRODUCTION

The use of information and communication technologies (ICTs) in education has become a relevant and much discussed issue over the last years. Although ICTs provide avenues for proactive teaching and active learning, produce knowledge more quickly, and create spaces for interaction and information sharing (Livingstone, 2012), "teachers are a little bit frightened about using of these tools.… The teacher is without any training how to use the whiteboard … teachers do not know how to use it and what are its advantages and disadvantages" (Kubiatko, 2017, p. 4). Indeed, the shift from traditional education programs toward technological classrooms has been slow and sporadic. Hence, an urgent need exists in preparing teachers to incorporate technology into their future lessons.

The integration of ICTs into the learning environment has been hindered by some obstacles, such as the two types of barriers defined by Ertmer (1999). The first-order barriers, which are extrinsic to teachers and can be removed via governmental policies, refer to the lack of adequate access, time (Legrain, Grillet, Gernigon, & Lafrenière, 2015; Reddy & Srivastava, 2003), bandwidth, training, and institutional support (e.g., Galanouli, Murphy, & Gardner, 2004; Ofulue, 2011). Conversely, second-order barriers are intrinsic to teachers and comprise pedagogical and technology beliefs and willingness to change (e.g., Inan & Lowther, 2010; Koehler & Mishra, 2008; Lane & Lyle, 2011; Y. Liu & Szabo, 2009).

Consequently, a large body of research has focused on how the use of technologies might support teaching practice (Bitonto Roselli, Rossano, Monacis, & Sinatra, 2010). Two general categories of professional computer use have been identified (Hogarty, Lang, & Kromrey, 2003; van Braak, Tondeur, & Valcke, 2004): (a) supportive computer use is related to the use of computers for proactive and administrative tasks, such as preparing worksheets, student administration and evaluation, and keeping track of pupils' learning progress, and (b) the class implementation of computers to support the teaching/learning processes, such as demonstration, drill and practice, instruction, and differentiation.

The influence of personal factors on ICT integration also has been taken into account (e.g., de Palo et al., 2012; Kahraman & Yilmaz, 2018; Teo, 2011) primarily in the context of preservice teachers (Scherer, Tondeur, Siddiq, & Baran, 2018; Tondeur, Aesaert, Prestridge, & Consuegra, 2018). But the relationship between motivational factors and cognitive processes, such as teaching constructivist beliefs, teacher self-efficacy, computer effectiveness, and so forth, has not been investigated thoroughly (H. Liu, Lin, & Zhang, 2017), especially when considering the linkage between hedonic and utilitarian aspects and constructivist beliefs, and when considering the Italian school contexts (Sinatra, Limone, & Contini, 2017).

One stream of research among theoretical models explaining consumers' acceptance of new technologies and their intentions for use has focused upon Davis' technology acceptance model (TAM; Davis, 1989; Davis, Bagozzi, & Warshaw, 1989), which is based on the theory of reasoned action (TRA; Fishbein & Ajzen, 1975). According to the TRA, individuals' behavior is determined by their intention to perform it. The intention itself is influenced by the individuals' attitudes and beliefs toward the behavior. Consequently, the TAM posits that perceived usefulness concerns the degree to which the user believes that using technology will improve his/her work performance; this component is crucial for technology acceptance. In contrast, perceived ease of use explains how effortless he/she perceives using the technology will be. Indeed, the higher the level of perceived ease of use and perceived usefulness, the higher the

tendency to adopt technological innovations; conversely, the lower the management of the benefits produced by innovation, the higher the difficulty of acceptance and use of technology.

Researchers have proposed and tested several competing models of the TAM, as well as models based on the theory of planned behavior, to explain and predict acceptance and use of ICTs. About a decade ago, Venkatesh and Bala (2008) synthesized a complete nomological network of the determinants of users into the integrated model of technology acceptance, known as TAM3. This model includes key factors and moderators, such as experience, to predict behavioral intention to use a technology and the actual technology use in organizational contexts. Performance expectancy, effort expectancy, and social influence were found to influence behavioral intention to use a technology, whereas behavioral intention exerts an influence on the using behavior.

From a more general perspective on human–computer interaction, classroom ICT integration could be associated with the emotional aspects of an individual's experience with technologies and, therefore, to the satisfaction of utilitarian and hedonistic needs. In this vein, it is worth noting that the hedonistic use of technology should be understood as the result of a process justifying a past or future action or behavior. Following Campbell's (cited in Van der Heijden, 2004) suggestion that the hedonic experience is connected to pleasure and excitement, Van der Heijden proposed the user acceptance of hedonic information system model to examine the variations in consumer behavior in regard to the utilitarian and hedonic use of information systems. This model posits that a utilitarian information system is designed to increase the user's task performance while encouraging efficiency, whereas a hedonic, pleasure-oriented system is a function of the degree to which the user experiences enjoyment when using the system. As a consequence, high levels of extrinsic motivation, operationalized as perceived usefulness, dominate the first system and high levels of intrinsic motivation, operationalized as perceived enjoyment, are significant determinants of the second one.

Lastly, constructivist beliefs have been individualized as a further meaningful factor influencing ICT integration because they affect teachers' decision-making processes about learning objectives and contents, organizational issues, the selection of media, the choice of instructional strategies, and the adoption of approaches toward assessment and evaluation. In fact, hypothesizing that learning occurs when learners are the makers of knowledge and meaning, the constructivist approach suggests that teachers' beliefs may be strong predictors of class use of computers (Higgins & Moseley, 2001; Tondeur, van Keer, van Braak, & Valcke, 2008). This contrasts with the traditional perspective that assumes learners receive information passively, which in turn may impact negatively on integrated ICT use (Hermans, Tondeur, van Braak, & Valcke, 2008).

In light of the issues described above, we sought in the current research to provide a deeper analysis of individual differences among teachers' ICT acceptance with reference to utilitarian and hedonic uses of information systems. For this purpose, we employed a path model to examine whether the cognitive factor of constructive beliefs directly predicted the key components of the TAM (perceived usefulness, perceived ease of use, and perceived enjoyment of ICT use) and the ICT integration within the classroom (H1). Moreover, we expected that the key constructs of the TAM mediated the relationships between constructive beliefs and ICT integration within the classroom (H2), and that perceived enjoyment mediated the relationship between constructive beliefs and teachers' ICT integration (H3). Following Van der Heijden's (2004) suggestion that work environments could be associated almost exclusively with utilitarian information systems, and given that interaction with the technological system is subordinate to the achievement of external goals,

we felt a reasonable hypothesis was that perceived ease of use was less central to the prediction of intentions to use a system than perceived usefulness (H4).

Finally, on the basis of the TAM3 (Venkatesh & Bala, 2008), we intended to examine through this path model whether the variable of experience, that is, years teaching, moderated the relationships between perceived ease of use and behavioral intention to use (H5) and between perceived ease of use and perceived usefulness (H6).

METHOD

Participants

The sample of this research was recruited from primary and secondary schools in three Italian regions selected on the basis of their convenience and/or accessibility. The sample comprised 374 teachers (*M*age = 38.69, *SD* = 5.30; *F* = 198) who attended a training course in ICTs in the period between November 2017 and January 2018. This single course took place at various times during that time period (i.e., the people attended multiple sessions of the single course) and aimed at helping teachers learn how to create engaging and interactive multimedia contents and presentations, at digitally assessing students' knowledge, at learning the basic concepts of distance learning and e-learning, and at exploring the best options for a successful ICTs integration into their classroom.

Data Collection and Analysis

The data collection period took place in the week prior to the training course. The teachers participated voluntary and responded to the pencil-and-paper questionnaire anonymously. The completion of the battery took approximately 20 minutes. The scales had been translated into Italian by two authors of this paper who are experts in both Italian and English and then, to assure accuracy, back-translated into English by a native English-speaker well familiar with Italian.

The methodological approach to the data involved descriptive and causal analyses. For the descriptive analyses, minimum, maximum, means, and standard deviations of each score were calculated. The sample was divided into two groups on the basis of the years of teaching experience, that is, the first group possessed 20 or fewer years (n = 201) of teaching experience and the second group had 21 years or more (n = 173). Mean differences between the two groups were calculated by using an independent samples t-test. Bivariate correlations were applied to analyze the associations among the variables of interest. The associations among the variables of interest were tested by path analysis; the years of teaching experience also were included within this model. Data analyses were conducted using SPSS and Mplus.

The Scales

The battery comprised a socioanagraphic section (i.e., gender, age, and school category) in addition to the five scales. All the scales are rated on a five-point Likert scale (from 1 = *strongly disagree* to 5 = *strongly agree*).

The Teacher's Beliefs Scale–Constructivist Teaching (TBS-CT; Woolley, Benjamin, & Woolley, 2004) is designed to assess teachers' beliefs related to the student-centered pedagogical perspective (Sang, Valcke, van Braak, Tondeur, & Zhu, 2011; Tondeur et al., 2008). It is composed of seven items (e.g., "I involve students in evaluating their own work and setting their own goals"; "I make it a priority in my classroom to give students time to work together when I am not directing them"). The instrument showed a sufficient level of reliability (Cronbach's $\alpha = .66$).

The Intrinsic Motivation–Computer Enjoyment Scale (Davis, 1989) measures the extent to which the activity of using the computer is perceived as enjoyable. The scale comprises three items (e.g., "I find using a computer to be enjoyable") and the internal consistency level was high (Cronbach's $\alpha = .91$).

The Extrinsic Motivation–Perceived Usefulness (Davis, 1989) is composed of six items assessing the degree to which a person believes that using a particular system would enhance his/her performance (e.g., "Using electronic mail enhances my effectiveness on the job"). The internal consistence was high (Cronbach's $\alpha = .90$).

The Perceived Ease of Use Scale (Davis, 1989) comprises six items that assess the degree to which a person believes that using technology would be free of difficulty or effort (e.g., "My interaction with a computer is clear and understandable"). The internal consistency was high (Cronbach's $\alpha = .88$).

The Behavioral Intention to Use Computer Scale (Davis, 1989) is composed of three items (e.g., "Assuming I had access to a computer, I attend to use it") measuring the likelihood that a person will adopt computer applications. The internal consistency level was high (Cronbach's $\alpha = .89$).

The ICT Class Use Scale (ICT-class; van Braak et al., 2004) consists of eight items (e.g., "I use ICT for independent work/ individual learning") assessing the frequency (from never to daily) of the didactic use of computers in the classroom. The internal consistency level was high (Cronbach's $\alpha = .83$).

FINDINGS

The results of the descriptive analyses are reported in Table 1. No mean differences emerged between the two groups of the teachers in the scores of constructivist beliefs, $t(372) = 1.17$, $p = .829$; intrinsic motivation, $t(372) = .192$, $p = .893$; perceived ease of use, $t(372) = -.204$, $p = .598$; and classroom use of technology, $t(372) = 1.17$, $p = .160$. Conversely, differences emerged in the scores of both perceived usefulness, $t(372) = -.232$, $p = .020$, and behavioral intention to use computer, $t(372) = 1.74$, $p = .010$. Teachers with 20 or fewer years of experience obtained higher scores ($M = 20.01$, $M = 14.01$, respectively) than those of the second group ($M = 18.89$, $M = 12.58$, respectively).

Correlations

Findings from bivariate correlations provided the first picture of the interrelationships among the constructs: All associations with the classroom use of technology were strong and positive. Moreover, teachers' ICT integration was strongly related to perceived enjoyment and TAM factors (Table 2).

Table 1. Descriptive Statistics: Mean and Standard Deviation of the Total Sample and of the Two Categories of Teaching Experience for Each Variable.

	Total Sample		**20 years**		**21+ years**	
	Min–Max	Mean (SD)	Min–Max	Mean (SD)	Min–Max	Mean (SD)
Age	28–57	38.69 (5.30)	31–60	44.95 (5.88)	43–62	54.77 (3.93)
Years of teaching experience	1–41	20.11 (9.09)	1–20	12.53 (5.20)	21–41	27.69 (.808)
C_beliefs	15–35	28.20 (2.19)	18–35	26.42 (3.16)	15–32	25.90 (3.15)
PE	3–15	12.22 (2.22)	3–15	12.25 (2.20)	6–15	12.19 (2.24)
PEU	6–25	18.83 (3.47)	6–25	18.78 (3.41)	6–25	18.88 (3.55)
PU	6–25	18.10 (3.02)	6–25	24.32 (3.67)	15–24	23.79 (3.59)
BIUC	8–15	12.78 (1.69)	8–15	12.99 (1.62)	8–15	12.58 (1.727)
ICT-CU	22–40	37.25 (5.17)	22–40	33.83 (3.99)	26–40	33.20 (3.505)

Note. C_beliefs = Constructivist beliefs; PE = Perceived Enjoyment; PEU = Perceived Ease of Use; PU = Perceived Usefulness; BIUC = Behavioral Intention to Use Computer; ICT-CU = Integration Computer Technology-Classroom Use.

Table 2. Bivariate Correlations Among The Variables Related to ICT Integration Within The Classroom.

	PE	**PEU**	**PU**	**BIUC**	**ICT-CU**
C_beliefs	.418**	.336**	.390**	.408**	.534**
PE	-	.573**	.451**	.397**	.507**
PEU	.573**	-	.402**	.490**	.505**
PU	.451**	.402**	-	.512**	.472**
BIUC	.397**	.490**	.512**	-	.566**

Note. $^{**}p < .001$; C_beliefs = Constructivist Beliefs; PE = Perceived Enjoyment; PEU = Perceived Ease of Use; PU = Perceived Usefulness; BIUC = Behavioral Intention to Use Computer; ICT-CU = Integration Computer Technology-Classroom Use.

Path Model

The path model exhibited good fit to the data, $\chi^2 = 44.280$, $df = 12$, $p < .001$, RMSEA = .067, 90% CI = .020 - .076, CFI = .927, SRMR = 0.68, and included a number of significant paths. Figure 1 displays the model that presents the interrelationships between the variables of interested.

As the path model demonstrates, constructivist beliefs predicted directly and positively perceived enjoyment of the computer class which, in turn, was also positively predicted by perceived enjoyment, perceived usefulness and behavioral intention to use a computer. This behavioral

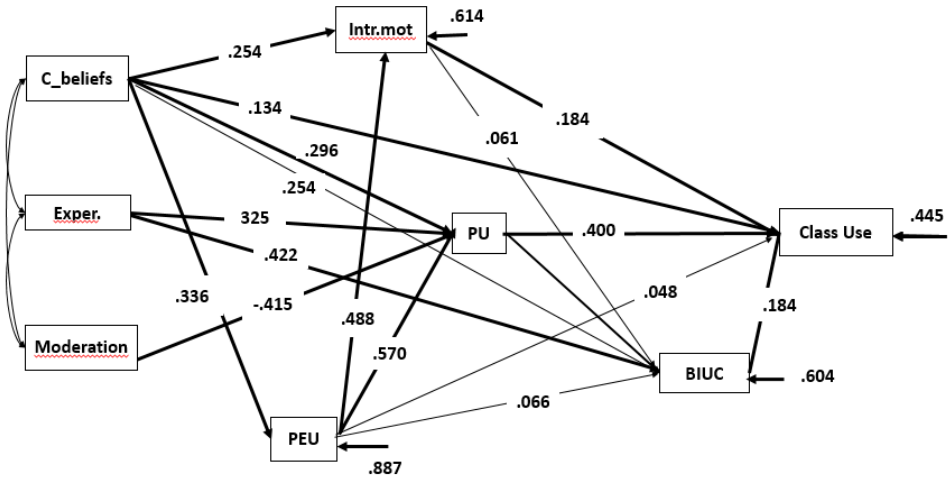

Figure 1. Observed path model of antecedents and mediators of the computer class use.

Note. Direct and indirect paths, whose values are standardized regression weights for predicted relationships. Values associated with endogenous (Int.mot, PU, PEU, BIUC) and indicator variable (Class use) are error variances. **C_beliefs** = Constructivist beliefs; **Int.mot** = Intrinsic motivation (operationalized as perceived enjoyment); **PU** = Perceived Usefulness; **PEU** = Perceived Ease of Use; **BIUC** = Behavioral Intention to Use Computer; **Class Use** = Computer Class Use; **Exper.** = Experience. Significant paths are in bold.

intention was positively predicted by perceived usefulness. Perceived ease of use positively predicted perceived enjoyment and perceived usefulness.

Teaching experience proved to be a positive predictor of perceived usefulness and a negative predictor of behavioral intention to use computer. Moreover, this experience moderated the relationship between perceived ease of use and perceived usefulness (Table 3).

As for the indirect effects (Table 4), results showed several interesting relationships. First, the relationship between constructivist beliefs and computer use in the classroom was mediated by perceived enjoyment (intrinsic motivation), perceived usefulness, perceived ease of use, and behavioral intention to use computer. The relationship between perceived ease of use and computer classroom use also was mediated by perceived enjoyment (intrinsic motivation), perceived usefulness and behavioral intention to use computer. Third, the relationship between perceived usefulness and computer classroom use was mediated by behavioral intention to use computer and, finally, the relationship between constructivist beliefs and behavioral intention to use computer was mediated by perceived usefulness alone and together with perceived ease of use.

DISCUSSION

The current research sought to explore individual differences in ICT integration in classroom among Italian teachers by examining a path model in which constructivist beliefs, perceived enjoyment together with perceived usefulness of computer, and perceived ease of use (Davis, 1989; Davis et al., 1989) explained the use of technology in teaching. Moreover, the moderating role of

Table 3. Standardized Regression Beta of Direct and Moderating Paths and Their Significance.

	B	*p*
Dependent variable: ICT CLASSROOM USE		
C_beliefs	.134	.015
BIUC	.184	.011
Int.mot	.184	.001
PEU	.048	.407
PU	.400	.000
Dependent variable: BIUC		
Int.mot	.066	.407
PEU	.061	.511
PU	.440	.000
C_beliefs	.123	.163
Experience	-.422	.005
Moderation	.003	.529
Dependent variable: PEU		
C_beliefs	.336	.000
Dependent variable: Int.mot		
C_beliefs	.254	.000
PEU	.488	.000
Dependent variable: PU		
C_beliefs	.296	.000
PEU	.570	.000
Experience	.325	.018
Moderation	-.415	.006

Note. **C_beliefs** = Constructivist beliefs; **Int.mot** = Intrinsic motivation (operationalized as perceived enjoyment); **PEU** = Perceived Ease of Use; **PU** = Perceived Usefulness; **BIUC** = Behavioral Intention to Use Computer.

teacher experience also was tested in line with the TAM3 model proposed by Venkatesh and Bala (2008).

Overall, the findings supported the hypotheses. Descriptive results showed differences in years of teaching experience, that is, teachers with 21 or more years of experience seemed to see no need to question or change their professional practice, and thus they were unlikely to adopt the use of ICTs within their classrooms. Compared to teachers with more years of experience, those with 20 years or fewer years of teaching experience seemed to have a positive attitude toward the use of ICTs in the classroom and to perceive the effectiveness of ICT integration in supporting both teaching and pupils' learning. These results might be justified by the fact that teachers with more years of experience could not have had much formal computer training during their higher education studies, and thus, they were more inclined to exhibit a limited use of technological tools or to discount ICTs potential benefits. These findings were consistent not only with investigations showing that ICT use decreases with teaching experience (Bebell, Russell, & O'Dwyer, 2004; Inan & Lowther, 2010; van Braak et al., 2004) but also with Prensky's (2001) suggestion that

Table 4. Direct, Total and Indirect Effects.

	B	*p*
Effects from CONSTRUCTIVIST BELIEFS to ICT CLASSROOM USE		
Total	.493	.000
Total indirect	.359	.000
Specific indirect		
Via Int.mot	.047	.005
Via PEU	.016	.408
Via BIUC	.023	.155
Via PU	.118	.001
Via Int.mot and PEU	.030	.002
Via BIUC and Int.mot	.003	.428
Via BIUC and PEU	.004	.530
Via BIUC and PU	.024	.061
Via PU and PEU	.076	.000
Via BIUC, Int.mot and PEU	.002	.438
Via BIUC, PU and PEU	.015	.036
Direct effect	.134	.015
Effects from INTR. MOTIVATION to ICT CLASSROOM USE		
Total	.196	0.001
Total indirect	.012	0.437
Specific indirect		
Via BIUC	.012	.437
Direct	.184	.001
Effects from PEU to ICT CLASSROOM USE		
Total	.429	.000
Total indirect	.381	.000
Specific indirect		
Via Int.mot	.090	.002
Via BIUC	.011	.530
Via PU	.228	.000
Via BIUC and Int.mot	.006	.437
Via BIUC and PU	.046	.030
Direct effect	.048	.407
Effects from PU to ICT CLASSROOM USE		
Total	.481	.000
Total indirect	.081	.031
Specific indirect		
Via BIUC	.081	.031
Direct effect	.400	.000
Effects from CONSTRUCTIVIST BELIEFS to BIUC		
Total	.385	.000
Total indirect	.262	.000
Specific indirect		
Via Int.mot	.017	.397
Via PEU	.020	.510
Via PU	.130	.001
Via Int.mot and PEU	.011	.408
Via PU and PEU	**.084**	**.000**
Direct effect	.123	.163

Note. **Int.mot** = Intrinsic motivation (operationalized as perceived enjoyment); **PEU =** Perceived Ease of Use**; PU** = Perceived Usefulness; **BIUC =** Behavioral Intention to Use Computer

teachers with less experience, being younger and born into a digital world, have been exposed to ICTs and thus possess more confidence than their older counterparts.

Results from bivariate correlations among psychological factors showed that ICT use in the classroom was positively linked to constructivist beliefs and the TAM factors. Accordingly, teachers with a more student-oriented approach seemed to consider ICTs as useful cognitive tools that encourage students to incorporate their critical-thinking, collaboration, communication, and problem-solving skills into their learning to solve authentic problems. This finding was in line with previous studies that revealed a positive relationship between teachers' beliefs and ICTs (Deng, Chai, Tsai, & Lee, 2014; Ertmer, Ottenbreit-Leftwich, & Tondeur, 2015; Prestridge, 2012).

As for the path model, results accounted for the role of cognitive factors in fostering the intrinsic motivation, perceived usefulness, and perceived ease of use which, in turn, predicted the intention to use computer in classroom, as well as the effective use of computer during lessons (H1). More specifically, teachers' attitudes and beliefs, especially when oriented to a constructivist approach to teaching, are significant antecedents of the extrinsic and intrinsic components of motivation for using computers in classroom.

When looking at the mediation relationships, the degree to which teachers believe that using technology will improve their performance (H2) and the degree to which they perceive effortlessness in using the technology mediated the effects of constructivist beliefs on the use of computers in classroom (H3). Interestingly, the relation between the constructivist beliefs and behavioral intention to use computers was mediated only by perceived usefulness, whereas perceived ease of use mediated that relationship only together with perceived usefulness.

Findings supported the hypothesis based on Van de Heijeden's (2004) suggestion that a less central role of the perceived ease of use in predicting intentions to use a system in comparison to perceived usefulness in a work environment characterized almost exclusively by utilitarian information. Indeed, perceived usefulness directly predicted intentions to use a technological system, whereas perceived ease of use did not predict it (H4). Moreover, when considering the role of these two separate constructs in connection with the relationship between constructive beliefs and behavioral intention to use, results showed a significant mediating role of perceived usefulness but not of perceived ease of use. Conversely, when considering simultaneously both constructs as mediators, the linkage between constructivist belief and behavioral intention to use became significant. Furthermore, when looking for the associations between perceived ease of use and ICT integration via perceived usefulness and behavioral intention to use, results provided a significant mediated linkage.

Finally, on the basis of the TAM3 (Venkatesh & Bala, 2008), this path model intended to examine whether the variable of experience, that is, years teaching, moderated the relationships between perceived ease of use and behavioral intention to use (H5) and between perceived ease of use and perceived usefulness (H6). Findings confirmed the moderating role of experience in the relationship between perceived ease of use and perceived usefulness, but not in the relationship between perceived ease of use and behavioral intention to use computer.

This research has some limitations. First, because it was carried out with two groups of teachers, some with 20 or fewer years of experience and others with 21 or more years, further studies are needed to clarify why teachers' willingness of using ICT tools decreased with experience. Once the underlying reasons for the discrepancy is identified, strategies to awaken and support native digital teachers' enthusiasm should be promoted.

Second, as neither the participants' knowledge of computer usage nor their use of technological tools were analyzed, our results could have been affected. For instance, individuals who frequently use social networking media in their everyday lives have a high chance of accepting technology into their teaching and learning (e.g., Elkaseh, Wong, & Fung, 2016). Third, the learning contents provided by the training course could not be adapted enough or customized to users' needs, cognitive styles, computer attitudes, and so on (see, e.g., Behera, 2012; de Palo, Limone, Monacis, Ceglie, & Sinatra. 2018). Consequently, future research should pay more attention to these factors for facilitating human computer interaction and enhancing successful ICT integration into the classroom (Monacis et al., 2009). For example, not only pre- and postimplementation interventions should be planned to lead to greater user acceptance and system success, but also specific game-based trainings should be recommended and implemented. These actions could affect teachers' mood, reducing their anxiety and leading to a more hedonic and pleasure-oriented system. Finally, as data were collected by using self-reported questionnaires, which reflected teachers' own evaluation, results could have been affected by response bias.

IMPLICATIONS FOR RESEARCH, APPLICATION, OR POLICY

In light of the multiple policy initiatives adopted by the European Commission to promote digital technologies in teaching/learning contexts and to define the conditions for the future connected classroom (European Commission, 2018), an urgent need has surfaced in providing more up-to-date figures regarding ICT adoption into the classroom.

A key finding of this study is that experienced teachers seem to show some sort of resistance toward integrating ICT use within their classroom, as indicated by their responses regarding intention to use. This important finding can influence future technological plans made by governments for teacher education.

Our results can offer much to future research that deepens understanding of the underlying reasons for such resistance (e.g., personality or desire, generational, professional developmental, cultural, discipline-based, systemic) and what programs or processes can be identified to address the identified conditions. In the case of application of this study and future research in this area, programs can be designed to support those who need assistance in incorporating ICTs into their teaching pedagogy and if necessary, to, adapt the teaching environment at the individual class, school, school system, and professional education levels to facilitate accomplishing the goal. The same applies to software and hardware developers who might work collaboratively with educators to create technologies and programs better suited for teachers' pedagogical and evaluation needs, which might decrease objections if the teachers can see clear benefit to classroom teaching. Finally, at the policy level, in addition to governmental and organizational articulation of the challenges and definition of the goals to achieve better integration of ICTs within classroom learning, these agencies can provide the financial and logistical support for the training the teachers need to achieve the goals.

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All correspondence should be addressed to
Lucia Monacis
Department of Humanities
Via Arpi, 176, University of Foggia
Italy
lucia.monacis@unifg.it

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