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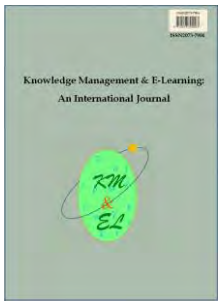

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Impact of personality on educator attitudes towards open educational resources

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Abstract: The emergence of open educational resources (OER) represents one of the most significant educational developments in the 21st century. Given their capacity to be freely adapted, re-used, and shared in different contexts, OER expand the options for educators. This paper reports on an initial study concerning such choices in which educators' personalities are investigated in relation to the OER adoption. Choosing open approaches has been shown to correlate with personal attitudes and several studies have highlighted the potential and need for investigating how personality might affect OER adoption. To address this gap, this study investigates the impact of educators' personality differences in relation to OER adoption. The analysis focuses specifically on the perception towards OER and the intention to use OER using the Five-Factor Model (FFM) to identify educators' personalities. Following a mixed methods approach, data collected from university educators using questionnaires (57 respondents) and interviews (15 respondents) are discussed in a two-stage hierarchical regression analysis. Demographic variables (age and gender) do not show any significant relationship. Findings reveal that while the explored five personality dimensions do not have an impact on the educator attitudes towards OER, they seem to have a significant impact on their intention to use OER. Specifically, only three personality dimensions – namely, extraversion, agreeableness, and openness – have a significant impact on the intention to use OER. This shows that 'open attitude' (mixing extraversion, and agreeableness, and openness) may be a fundamental prerequisite for educators to engage in open teaching practices, including the use of OER.

Keywords: Open educational resources; Personality; Five factor model; Big five inventory; Open education; Teacher training; Educator attitudes

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1. Introduction

1.1. Open educational resources

Since the invention of the World Wide Web, Information and Communication Technology (ICT) has rapidly evolved while being a catalyst for new forms of educational opportunity and innovation (Li, 2018; Negahban & Zarifsanaiey, 2020; Stracke, 2020). Arguably, underpinning this innovation is the open architecture of the Internet itself: It is enabling a resilient global information infrastructure based on open protocols and spawning knowledge networks with unprecedented social and organisational connectivity (Castaneda & Durán, 2018; Leeson & Mason, 2007). During this period *openness* in education also increased (e.g., through the open university movement) with open education as key concept: It spans several dimensions, including open access, open technology, open scholarship, open licensing, and open educational resources (OER) (Burgos, 2017; Stracke, 2017). The term OER was first coined at UNESCO's 2002 Forum on Open Courseware, and was lately defined as 'learning, teaching, and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license that permit no-cost access, reuse, repurpose, adaptation, and redistribution by others'

(Stracke et al., 2019; UNESCO, 2019). Indeed, at this same time Massachusetts Institute of Technology (MIT) had already pioneered Open Courseware (OCW), a significant forerunner to contemporary Massive Open Online Courses (MOOCs) that operated alongside synergistic projects such as the Public Knowledge Initiative (PKI) – though both projects (OCW and PKI) were likewise preceded by many grassroot initiatives (Stracke et al., 2019). The central idea or value proposition of OER, particularly for the developing world, is to increase educational access and equity (Stracke et al., 2022b; Tlili et al, 2022). That can be achieved by publishing educational materials (e.g., courses, documents, pictures, videos) with open licenses in online repositories that can facilitate their discovery and use by educators and learners worldwide (McGreal, 2011).

OER are considered as one of the most significant educational developments in the 21st century (Shear et al., 2015) and have been consistently identified as one of the emerging technologies and practices by the EDUCAUSE Horizon Report (Brown et al., 2020; Pelletier et al., 2021). Specifically, OER can reduce learning costs, since learners do not have to pay to access such content. And they can enhance teaching and learning given their capacity to be freely adapted, reused, and shared in different contexts (Hassler et al., 2014). Hilton (2016) highlighted that OER have pedagogical and financial advantages in higher education and can complement – if not replace – proprietary resources in future learning scenarios. Tlili et al. (2020) stated that OER deal with pro-active contribution and not as a free-for-all consuming spot. In consequence, there is a fair trade between both sides of the coin, and a reasonable sustainability model is reached, implemented and maintained. Butcher (2011) stated that OER can enhance the quality of the provided learning content as well as capacity building and knowledge sharing. Pattanshetti et al. (2018) and Stracke and Trisolini (2021) underlined the need and difficulty to identify the quality of OER, in particular for learners. Huang et al. (2020) and Stracke et al. (2021) showed that OER are also being used by universities worldwide in emergencies, such as the current COVID-19 pandemic, to maintain education from home.

Political priority is assigned to the adoption of OER at all educational levels (UNESCO, 2019) and the ethical drivers of the open education movement are analysed (Conole & Brown, 2018). Therefore, researchers have been increasingly investigating the factors that can affect the adoption of OER at the contextual, institutional, and personal educators' levels (Stracke et al., 2022b, 2022c). One of these factors is the educator's personality.

1.2. Individual factors and personality

There are numerous theories that can inform how and why people interact with the digital environment. Likewise, there are many disciplines beyond education that can inform how such engagement might be optimised for learning – including fields such as human-computer interaction, cognitive psychology, developmental psychology, knowledge management, and sociology (Chen et al., 2019). Thus, Friesen (2009) has argued that theorising the domain of e-learning is best considered as interdisciplinary. In designing this study on how personality might impact the use of OER, a broad selection of literature was therefore consulted.

Some of the foundational work on personality was proposed by Myers (1962) as the 'Myers-Briggs type indicator', which identified a base set of sixteen personality types. Building on this framework a few decades later, McCann and Margerison (1989) observed that 'work-style preferences' play an important role in the performance of teams in the

workplace. This work led to the very successful implementation of the Team Management Index which human resources departments within organisations all over the world make use of today. More recently, some theories and approaches have analysed individual factors for development and behaviour (Kang et al., 2020; Punniyamoorthy & Asumptha, 2019; Weldon et al., 2021). Hattie (2008), for example, has demonstrated how little evidence exist on the impact of learning design and pedagogical methodologies if there is concentration on single factors (Hattie, 2008; Hattie & Timperley, 2007). However, his analysis and recommendations are also criticised for formal errors and simplification which underlines the complexity of the theoretical challenges (Eacott, 2017; McKnight & Whitburn, 2020; Terhart, 2011; Wecker et al., 2017). Despite such criticisms, his main outcome remains: many philosophies and schools of thought from psychology and educational science fall short and miss the bigger picture by not providing a sufficiently broad perspective of the individual context. Arguably, current examples are Self-Determination Theory (SDT) by Deci and Ryan (1985, 2000, 2008) and the Cognitive Load Theory (CLT) by Sweller (1988, 2010). While these theories provide an important perspective in understanding human engagement with the digital environment, they both only address single aspects (motivation in case of SDT and working memory in case of CLT). Consequently, this has led to different perspectives and explanations (Richardson et al., 2012) resulting in validated instruments that are sometimes incompatible (Leppink, 2020). Thus, it is recommended that research follow broader multi-dimensional theories that recognise personal, cultural and context conditions rather than applying single factor analysis (Cheung et al, 2011). Complementing such an approach, research following open science principles and conducting replication studies can lead to more evidence-based findings on these approaches and their applicability, impact and comparability (Nosek et al., 2015; Stracke, 2019).

Such a broad theory is the Five-Factor Model (FFM) based on the research of personality and one of the most common psychological models (Bahçekapılı & Karaman, 2020; Franić et al., 2014). Personality as a concept is a much broader concept than mindset and attitude: Attitudes are considered as subjective measurements with fluid status and analysed as mediators between motivation and engagement (Ferrer et al., 2022), between education, self-efficacy and mindsets (Wardana et al., 2020) and as relevant factors for ICT usage in higher education (Guillén-Gámez & Mayorga-Fernández, 2020). Mindset is distinguished in two dimensions: fixed mindsets leading to frustration through failures and growth mindset taking failures as challenges (Dweck, 2006). The mindset theory explains attitudes and answers to challenges and failures in relation to individual behaviours and factors in beliefs and values (Yeager & Dweck, 2020). During the last years, there is an increasing misunderstanding called "false growth mindsets" by Dweck (2006) while 'correct' growth mindsets should foster purposeful effort and provide meaningful praise (Kapasi & Pei, 2022). Nevertheless, attitudes and mindsets cannot explain the full complexity of individual factors that is covered and addressed by the concept of personality and its most prominent FFM (Judge et al., 2002).

No agreed-upon definition of 'personality' exists in the scientific literature. However, Allport (1961) and Child (1968) have put two classic definitions forward. Allport (1961) considered personality as a unique psychological system located inside individuals. Child (1968), on the other hand, considered personality as an internal factor that gives consistency over time to the individual's behaviour. Irani et al. (2003) stated that personality is one of the characteristics that is widely identified as an important indicator of individual differences. It affects the way someone makes daily decisions, including

tastes, behaviours, friendships, and presidential elections (Quercia et al., 2011; Youyou et al., 2015).

Within educational settings, Wankat and Oreovicz (2004) stated that personality can affect how learners and educators perceive and act on information and knowledge. Tlili et al. (2016) highlighted the importance of taking into consideration personality in computer-based learning environments. While personality has been proved to affect the way how learners behave in computer-based learning (Kolb, 1984; Tlili et al., 2016), it has also been proved to affect educators in different ways. For instance, Decker and Rimm-Kaufman (2008) highlighted that personality can affect the way educators feel while teaching as well as the teaching methods they prefer. Feldman (1986) pointed out that educators' personalities might impact their performance.

1.3. Purpose of this study

While several studies have highlighted the importance of investigating educators' personalities in relation to OER adoption, to the best of our knowledge, no study has been conducted to fulfil this purpose. Therefore, this study was designed to investigate the impact of educators' personality on OER adoption, specifically on the perception towards OER and the intention to use OER.

Sikula et al. (1996) stated that teaching requires not only the ability to offer lessons, it is also very important to be open and collaborate with other education professionals as well as to have a high awareness of the educational communities in which an educator belongs. They further mentioned that personality is a good predictor of this ability. Similarly, as adopting OER requires this 'openness' ability within educators, whether personality can also affect the adoption of OER may be questioned. Several studies (Cox, 2016; Gunness, 2012; He & Wei, 2009; McGill et al., 2013; Nascimbeni et al., 2018; Pegler, 2012; Reed, 2012) confirmed that despite the importance of contextual and institutional factors, the choice on whether to adopt OER is made at the educator's level. This means that if a person has low personal motivation in experimenting with OER, he/she is unlikely to use them. In a well-known study on educators' attitudes towards OER, Rolfe (2012) noted that the role of educators in the open education movement is critical. Therefore, it is fundamental to understand their attitudes towards the use of OER to monitor progress and to identify the best training and support strategies. In addition, the barriers that prevent educators from engaging with open content have been explored widely, and some of these are related to the educators' personalities. For instance, publishing teaching materials as OER means that everyone can access them: This may push educators outside of their comfort zone as they are not familiar with their peers' and the learners' criticism (Nascimbeni & Burgos, 2016). Tlili et al. (2019) have further investigated the elements on which these personal choices are based. They highlighted the importance of investigating the impact of educators' personalities on the use of OER since the choice of using open approaches strongly depends on personal cultural attitudes. Tlili et al. (2021) further mentioned that the mindset and personality of learners and educators, the main OER users, should also be "open". It is relevant to adopt this change in future learning and teaching process, as different cultures may perceive OER and technology adoption.

To summarize, choosing open approaches has been shown to correlate with personal attitudes and several studies have highlighted the potential and need for investigating how personality might affect OER adoption. But the literature is scant about the impact of the personality in relation to the adoption of OER. Therefore, the main

research question of our study is: *Which relations exist between the personalities of educators and their OER adoption (measured through their perceptions towards OER and their intention to use OER)?*

2. Methodology

2.1. Theoretical framework

Various personality models are reported in the literature to understand individuals' behaviours and characteristics. Specifically, this study refers to the Five-Factor Model (FFM), which is one of the most common psychological models (Franić et al., 2014). It is frequently used in education by both learners and educators (Tlili et al., 2016). The motivation behind using FFM in this study is because: (1) it is one of the most accepted personality models in the literature (Barrick et al., 2003; Costa & McCrae, 2009; Trull & Sher, 1994) to describe personality traits; (2) it is validated across various countries and cultures (John et al., 2008; Murphy et al., 2021; Novikova & Vorobyeva, 2019); and, (3) it is derived from common language descriptors (Ackerman, 2020; DeYoung et al., 2007), which makes it is an accurate personality model and easy to be reused in different contexts (DeYoung et al., 2007). It attributes a variety of personality characteristics to the following five dimensions (often abbreviated as OCEAN):

Openness to experience refers to the individual's degree of intellectual curiosity, imagination, interest in new experiences, and originality (McCrae & John, 1992; Watson & Clark, 1997). People who are high in openness to experience tend to be more logical and creative and seek out new experiences.

Conscientiousness refers to the individual's degree of self-discipline, orderliness, organisation, and achievement striving. People who are high in conscientiousness are characterised as more organised, punctual, hardworking, ambitious, and responsible (Patrick, 2011). Therefore, they may have high task performance and job satisfaction levels (Barrick & Mount, 1991) as well as better academic results (Busato et al., 2000).

Extraversion refers to the individual's degree of activeness, assertiveness, interpersonal skills, warmth, and sociability as well as their energetic, enthusiastic, outgoing, and talkative traits and positive emotions. People who are high in extraversion are characterised as more optimistic and energetic and tend to show a high level of commitment to social groups and activities (Watson & Clark, 1997).

Agreeableness refers to how a person interacts with his/her environment in terms of compliance, trust, altruism, kindliness, modesty, and generosity. People who are high in agreeableness tend to be more willing to help others, cooperative, sympathetic, and confident (McCrae & John, 1992).

Neuroticism refers to the individual's degree of emotional stability, anxiety, hostility, depression, impulsivity, self-consciousness, and emotional vulnerability. People who are high in neuroticism tend to be more worried and less satisfied with their work and evoke more negative life events (Emmons & Diener, 1985).

2.2. Participants and procedure

Fifty-seven university educators from Cyprus voluntarily participated in this experiment after the Institutional Review Board (IRB) approval. These educators, among others, were contacted since they participated in OER trainings organized by the university. This means that all the participants were familiar with OER, meaning that they knew the meaning of the term and were aware of the potential advantages of using OER. Because of the COVID-19 situation, both questionnaires, related to OER perception and personality (detailed in the following Section "Measures"), were sent to the educators and collected via email. This study followed the British Educational Research Association's 'Ethical Guidelines for Educational Research' (2011), where full ethical approval was provided by the educators' institutions before data collection. Participation in this research was voluntary, and the participants were free to withdraw from the research at any stage. Each participant was fully informed of the purpose of the research in advance. Table 1 presents the demographic statistics of the participants.

Table 1
Demographic statistics of the participants

Measure	Category	Number	Percentage (%)
Gender	Female	29	51.02
	Male	28	48.97
	Total	57	100
Age (years)	25–35	21	36.84
	36–46	20	35.09
	47 and above	16	28.07
	Total	57	100

2.3. Measures

The educators' personalities were measured using the Big Five Inventory (BFI), which is a widely used instrument in the literature (John & Srivastava, 1999). The BFI is a five-point Likert-type questionnaire, with answers ranging from 1 ('strongly disagree') to 5 ('strongly agree'). It consists of 44 items which cover the five personality dimensions in the FFM, such as "I am someone who is helpful and unselfish with others" for the agreeableness dimension and "I am someone who is talkative" for the extraversion dimension. To investigate the educators' perceptions towards OER, a questionnaire was adapted from Karunanayaka and Naidu (2019). It consists of 10 items and covers two dimensions, namely: (1) the educators' attitudes towards OER; and (2) the educators' intention to use OER in their teaching contexts. The first construct on attitudes includes statements such as "OER can enhance the teaching process" or "I do not see the importance of using OER". The second construct on intention covers statements like "I frequently use teaching materials as OER" or "I am not planning to publish my teaching resources as OER".

To better understand the quantitative data collected from the educators through the questionnaires, interviews with the educators were further conducted. The interview focused on the educators' personal motivations to use (or not to use) OER. This can help to better understand their motivation towards OER adoption in relation to their personalities. Additionally, the interview focused on how the educators used OER in their contexts as well as the challenges that they faced. In this context, 15 educators were

interviewed, and their answers were analysed, as detailed in the next section, to draw conclusions.

2.4. Data analysis

Cronbach's alpha was calculated to investigate the reliability of both questionnaires, as shown in Table 2. The results yielded an alpha of 0.7 or higher, which means that both questionnaires produced acceptable reliabilities (Yu, 2001). Additionally, the descriptive statistics for independent and dependent variables were calculated, as shown in Table 2. Particularly, skewness and kurtosis were calculated to investigate the normality of the data. As shown in Table 2, the obtained values were within the recommended range of |2.0| and |9.0|, respectively (Schmider et al., 2010).

Both questionnaires were analysed using the Statistical Package for the Social Sciences, version 20. The statistical significance level was set at $p < 0.05$. Hierarchical regression analyses were conducted to examine the effects of the groups of independent variables (personality) on the educators' perceptions towards OER. Standard estimate (β), F, and adjusted R2 were calculated for each stage. As mentioned by Aiken and West (1991), gender was entered as a dummy coded variable (female = 0; male = 1) and the Big Five traits as a centred continuous predictor to reduce the potential for multi-collinearity and enhance the interpretability of the results (Barron & Kenny, 1986).

Table 2
Descriptive statistics of the questionnaire scores

Variables	Mean	SD	Skewness	Kurtosis
Independent				
Openness (α = .85)	3.94	.48	.27	− .35
Conscientiousness (α = .73)	4.21	.46	− .46	− .75
Extraversion (α = .81)	3.69	.60	− .35	.31
Agreeableness (α = .79)	4.22	.46	− .41	.24
Neuroticism (α = .84)	2.51	.53	− .01	− .52
Dependent				
Attitudes towards OER (α = .79)	3.68	.55	.34	− .33
Intention to use OER (α = .85)	3.72	.82	− .61	− .60

Table 3
Coding scheme for analysing interviews

Code	When to Use
Personal motivation for using	Use this code when the educator is talking about his/her personal motivation for using OER for teaching.
Personal motivation for not using	Use this code when the educator is talking about his/her personal motivation or concerns for not using OER for teaching.
Challenges	Use this code when the educator is talking about the challenges of using OER for teaching.
Collaborative tools	Use this code when the educator is talking about the integration of collaborative tools for teaching.

To analyse the collected interviews, content analysis, which is one of the classical procedures for analysing textual materials, was used (Flick, 2009). The analysis was based on the steps proposed by Erlingsson and Brysiewicz (2017). Particularly, two coders read the given interview results before they start coding them based on the developed coding scheme in Table 3. For coding reliability purposes, the identified articles were independently coded by these two coders (Lipsey & Wilson, 2001). In case of disagreement between the coders during the coding process, an agreement was reached through discussions. The coding results were finally grouped in themes to understand the educators' intention to use OER based on their different personalities.

3. Results and discussions

Table 4 shows the results of a two-stage hierarchical regression analysis, with each of the two dimensions (attitudes towards OER and intention to use OER) of the perception questionnaire as the dependent variable. The demographic variables (age and gender) were added in the first stage to control the effect of the educators' demographics. The BFI dimensions (openness, conscientiousness, extraversion, agreeableness, and neuroticism) were added in the second stage.

Table 4
Hierarchical regression analyses results

Dependent Variable	Predictor	Model 1 − β	Model 2 − β
Attitudes towards OER	Demographic variable		
	(a) Age	− .02	− .08
	(b) Gender	− .15	− .19
	BFI		
	(a) Openness		− .27
	(b) Conscientiousness		− .09
	(c) Extraversion		.24
	(d) Agreeableness		− .13
	(e) Neuroticism		− .20
Adjusted R^2		− .01	− .04
F change		.65	.77
Sig. *F* change		.52	.57
Intention to use OER	Demographic variable		
	(a) Age	− .08	− .03
	(b) Gender	.05	.38
	BFI		
	(a) Openness		.06*
	(b) Conscientiousness		.25
	(c) Extraversion		.53*
	(d) Agreeableness		.08*
	(e) Neuroticism		.11
Adjusted R^2		− .03	.27
F change		.20	4.91
Sig. *F* change		.81	.00

Note. * $p < .05$

The hierarchical regression analysis results revealed that at the first stage, the demographic variables did not contribute significantly to the regression model for each dependent variable: $F(5, 41) = .65$, $p = .52$) for attitudes towards OER, and $F(5, 41) = 20$, $p = .81$) for intention to use OER. In the second stage, the five personality dimensions had no significant regression weight [$F(5, 41) = .77$, $p > .05$] on the educators' attitudes towards OER. This implies that the educators had positive attitudes towards OER regardless of their personality scores. However, the five personality dimensions had significant positive regression weight [$F(5, 41) = 4.91$, $p < .05$] on the educators' intention to use OER with 27% of the variance. This indicates that educators with high personality scores (in the five personality dimensions) should have higher intention to use OER. Interestingly, only three personality dimensions – namely openness ($\beta = .06$), extraversion ($\beta = .53$), and agreeableness ($\beta = .08$) – had positive significant impact on the intention to use OER. This implies that educators who have high scores in these personality dimensions are more likely to use OER in their contexts.

The results above could be explained by the fact that people who are high in openness tend to be more creative and seek out new experiences (McCrae & John, 1992; Watson & Clark, 1997). Therefore, they may consider OER use as a new way to create teaching materials by, for instance, combining their resources with others' resources published as OER as well. In line with this, one of the educators who were high in openness mentioned during the interviews that the motivation behind using OER is 'to share ideas with others to improve myself and the others.'

People who are high in extraversion tend to be interested in group work and in socialising with others. Hence, they could see OER use as one of the ways to achieve this by, for instance, working with other educators to produce new teaching materials as OER. In this context, based on the interview analysis results, most of the participating educators with high extraversion reported that OER can give them a chance to make their teaching content more engaging for their students and thus, enable more communication and collaboration with them. They also reported that using OER can help them get to know other educators worldwide and produce open teaching materials at the international level, not only within their university. For instance, one of the educators mentioned, 'The use and sharing of the materials I have prepared by academics from different countries around the world increases my personal motivation. Thus, I have the opportunity to share my knowledge with a large audience in line with the license I've added.'

Finally, people who are high in agreeableness tend to be more willing to help others (McCrae & John, 1992). Hence, they may consider OER as an opportunity to help learners, for instance, who have poor access to online learning materials or to help colleagues by sharing their own teaching content. Based on the interview analysis results, most of the participating educators who are high in agreeableness mainly use OER for two reasons: to increase their students' motivation and to help their students easily access quality materials anywhere. For instance, one of the educators stated, 'OER are useful and helpful. In online education, presenting only traditional lectures cannot attract students' attention. However, OER-based lectures can make students learn more easily.'

The importance of these three personality traits (openness, extraversion, and agreeableness) with significant regression weight resonates with the results of a recent study by García-Holgado et al. (2020), which states that an open attitude is a fundamental prerequisite for educators to engage in open teaching practices, including the use of OER. In this work, having an 'open attitude' is defined as 'being ready to openly share one's

work and to use the knowledge created by others and openly distributed in order to improve [the] access, participation, and quality of teaching and learning' (p. 58), seemingly aligned with the characteristics of openness, extraversion, and agreeableness. Additionally, all the interviewed educators, regardless of their personalities, mentioned common challenges that might limit them from using OER in their contexts: (1) copyright, where the educators expressed their concern for others using their teaching materials despite the applied open licenses; (2) the lack of infrastructure that supports the production of teaching materials as OER; and (3) the lack of skills for a better implementation of open teaching practices.

Furthermore, whether gender or age may moderate openness, extraversion, and agreeableness for the intention to use OER may be questioned as psychological studies have shown significant gender differences in personality (Chopik & Kitayama, 2017; Weisberg et al., 2011). For instance, are male educators who are high in extraversion more likely to use OER in their contexts than female educators? To investigate this matter, the correlation between the interaction of each of the three personality dimension scores (openness, extraversion, and agreeableness) that were found to significantly impact the intention to use OER and both age and gender were calculated. As shown in Table 5, no significant correlation was found, which implies that both variables – namely, gender and age – do not moderate the three personality dimensions for the intention to use OER.

Table 5
Correlation results

Dependent Variable	Age By Extra	Age By Open	Age By Agre	Gender By Extra	Gender By Open	Gender By Agre
Intention to use OER	.31	.16	.15	.02	−.03	−.05

4. Conclusions, implications, limitations, and outlook

There are many theories from psychology that try to explain personality in absolute terms, such as Self-Determination Theory (SDT) by Deci and Ryan (1985, 2000, 2008) and the Cognitive Load Theory (CLT) by Sweller (1988, 2010). However, they lack a transversal approach to how personality affects, and can be affected by, activities and decisions in daily life. For instance, the Five-Factor Model (FFM) approaches personality as a concept defined not only by mindset and attitude (Judge et al., 2002). Further, Child (1968) addresses the internal factor that supports the individual's behaviour. Other authors considered personality as an indicator to explain individual differences (Irani et al., 2003) or a way to take daily decisions (Quercia et al., 2011; Youyou et al., 2015). In this context, the relation between education and personality remains unclear, even more when focused on OER. This is especially true since the adoption of OER by educators depends almost exclusively on them and their motivation, competences, abilities, and interests. It also includes the level of exposition to learners, who are taken as peers, and who can criticize the teachers' performance (Nascimbeni & Burgos, 2016; Tlili et al., 2019).

Understanding whether and how educators' personalities influence their attitudes towards OER and their intention to engage with open content is important for two reasons. First, it can help to design more effective and targeted capacity-building actions for educators on the use of OER, as recommended by the recent UNESCO Recommendation on OER (2019). As noted by Nascimbeni and Burgos (2016), openness has many entry points, and these might depend on the personalities of the individual educators. Educators with more extroverted personalities might be, for example, more inclined to approach and to learn about OER and open approaches as ways to improve their collaborations with their

colleagues and peers. On the other hand, educators who scored higher in conscientiousness might be motivated to engage with OER from a social equity perspective (Bali et al., 2020). Efforts by universities and other institutions that aim to build the capacity of educators to work with OER should recognise these different motivations connected to different individual personalities. Second, this understanding can help to reach a better understanding of educators' approaches to teaching innovation since OER are one of the key components of contemporary innovation ecosystems in universities. Working with OER can, in fact, have different impacts on the learning ecosystems that educators create and nurture, and the level of teaching innovation can vary widely within these ecosystems. Personality is definitely one of the causes of these differences, along with contextual elements such as the existence of incentives for those educators who implement OER projects within universities.

The main finding of this study is that the personalities of educators do not influence their attitudes towards OER, but they do impact on their intention to use OER, especially if we look at characteristics such as openness, extraversion, and agreeableness. OER is not just a file format or a delivery license for a resource, but a way of approaching education that interweaves with a number of additional aspects, like data, access or technology (Burgos, 2020). Indeed, the mindset of the educator drives their intention to use open education approaches, however there is no evidence of a direct connection to the educator's personality. This proves that any educator, despite their personality, can develop a positive attitude towards the use of OER, which is considered as the first step in the journey towards the implementation of open teaching practices. Nascimbeni and Burgos (2016) identified two transition phases along this journey: the acceptance of the possibility to work with open resources and approaches and the actual capacity of implementing such approaches. The first transition phase is fundamental for educators to engage with open teaching and is connected to the attitude of sharing openly and using content produced by others. Knowing that educators' personality traits do not influence their interest in OER shows how the use of OER can potentially be generalised across all educators' categories. Understandably, with regard to the intention of using OER, personality plays a stronger role and hints at the fact that OER-related capacity-building activities for educators should be as tailored and personalised as possible: They should include not only the practical knowledge and skills needed to use open content but also a reflection on the change in teaching attitudes that needs to take place, especially for educators who are not as open, extroverted, and agreeable.

This study represents the first step in the analysis of personality-related conditions that can influence the choice of educators to work (or not to work) with open approaches and has adopted an exploratory approach that can open up several research lines. For example, it would be interesting to explore the influence of educators' personalities on the use of OER in different moments of their career to check whether going through the transition phases that we mentioned earlier influences their perception towards OER, as found by Nascimbeni et al. (2018). In addition, it would be interesting to know whether those educators who use OER substantially report that this has had an impact on their professional practice in terms of self-perception and on their personalities and attitudes towards teaching innovation. Furthermore, personal and professional development and capacity-building and establishment of institutional OER repositories could provide additional support as reported by Truong et al. (2021). Ultimately, any finding that can help to understand how to build an openness among educators towards OER, starting from personal characteristics seen as complementary to the needed competences to work with

open teaching practices, would help both those in charge of building openness capacities and the educators themselves, allowing for more tailored and sensitive capacity-building interventions.

It should be noted that despite the solid grounds that this study provided about OER and educators' personalities, it has some limitations. First, the sample size was limited. Second, this study did not consider the educators' culture, which might affect how educators behave, think and perceive teaching, including open teaching using OER. Third, it follows the FFM theory which is a broad concept (therefore, it was selected) but cannot cover all factors as any given theory (Cheung et al., 2011). Thus, more research is required to analyse potential further factors and conditions influencing the personality and attitudes of educators towards OER.

To summarize, this study is a first contribution towards a long-term research agenda on how to strengthen the design, publication, adaptation and re-use of OER and to develop the personality and attitudes of responsible educators. That will improve the implementation of OER worldwide and in particular the UNESCO Recommendation on OER (2019) leading to sustainable education for all. Based on the findings of this study, three implications for practice and policy development can be identified, namely: (1) personality dimensions do not have an impact on the educator attitudes towards OER, showing that OER adoption can potentially be generalised across all educator categories; (2) developing an 'open attitude' can be a first step towards adopting OER in designing and teaching practices; and (3) designers should consider the motivation factors within different personality traits when designing OER capacity-building actions for educators.

Author Statement

The authors declare that there is no conflict of interest.

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