

Personality and Organizational Cynicism: Predicting the Innovative Work Behavior of Teachers in International Schools

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Σας ευχαριστώ πολύ!

Abstract

Educational innovation is a necessity in today's rapidly changing world. Teachers are the most important asset of schools, and they are expected to be innovators themselves for sustainable educational change to be realized. This study aimed to determine the underlying factors of teachers' innovativeness. The focus was twofold. The first part examined whether distinct groups of innovators exists among teachers based on their innovative work behavior (IWB), using Rogers' (2003) model as framework. The second part examined personality and organizational cynicism as predictors of teachers' IWB. The sample consisted in total of 61 teachers (70.5% female; $M = 43.33$ years) from various international schools across the world. An online self-rated questionnaire was assigned to the participants via email, which they completed after their consent. Cluster analysis was conducted to investigate the structure of the sample in terms of their IWB. The findings suggested that four, instead of Rogers' five, innovator categories were evident among the participants, displaying however some resemblance with Rogers' model. Regression analysis showed proactivity, agreeableness and neuroticism to be the best set of predictors of teachers' IWB. The implications of this research along with suggestions for future research are provided.

Introduction

In today's world, the rapid development of technology greatly impacts our society by altering the ways people communicate, learn and work (Blanden, & McNally, 2015; Winthrop, McGivney, Williams, & Shankar, 2016). The almost unlimited access to information and communication creates the demand for a wide set of skills that allow people to communicate and collaborate across borders, adapt to ambiguous situations and think critically. Education has a central role in developing young people's skills and competencies. Preserving traditional educational methods in a fast-changing environment inhibits schools' ability to face the posed challenges and provide high-quality education that meets learners' needs (OECD, 2016; Serdyukov, 2017; Winthrop et al., 2016).

Instead, new approaches are required to adequately prepare young people in order to succeed in the ever changing world (Blanden, & McNally, 2015; Winthrop et al., 2016). As Mishra (2014) suggested, innovation in education is the key. Innovation is perceived as something new, be it a practice or product that creates new solutions to existing problems (Maranville, 1992; Rogers, 2003; West & Anderson, 1996). Educational innovations aim at transforming the teaching and learning experience, by means of new courses, practices, materials and resources, that align knowledge and skills with the requirements of the present day and efficiently leverage the available resources to improve student outcomes (McGreal, Kinuthia, Marshall, & McNamara, 2013; Simplicio, 2000).

Since its foundation, formal education undergoes multiple reformations as a response to the changing world (Garcia-Huidobro, Nannemann, Bacon & Thompson, 2017; Hamilton, 2015; Serdyukov, 2017). However, according to the Organization for Economic Co-operation and Development (OECD) (2014), one of the constant challenges that education faces is the

harmonization of the available resources with student outcomes. Even though there is an increase in the investments for educational purposes, the improvements in student outcomes are not analogous. This suggests that innovation by itself does not entail success. Frambach and Schillewaert (2002) argued that, when the targeted adopter unit rejects an innovation, the benefits that would follow are inhibited. Furthermore, Rogers' (2003) theory on the adoption and diffusion of innovations suggests that the time of innovation adoption (i.e. *adoption rate*) varies between individuals and across social systems. He identifies five innovator categories based on the time of adoption, namely *innovators*, *early adopters*, *early majority*, *late majority* and *laggards*.

Educational change is an especially challenging and slow endeavor (Garcia-Huidobro, & Jara, 2017; Mishra, 2014; Serdyukov, 2017; Shirley, 2017), since the implementation of educational innovations require a shift in teachers' behaviors (Biddle, Good, & Goodson, 1997; Messman & Mulder, 2011; OECD, 2016). Teachers are the most valuable asset of schools and the actors of educational change (Sharma 2001; Vähäsantanen, 2015). Instead of being just adopters, teachers are expected to be innovators themselves, and actively contribute to the development and implementation of innovations (Van der Heijden, Geldens, Beijaard, & Popeijus, 2015). In other words, teachers' innovative work behavior (IWB) is essential. Messman and Mulder (2011) suggested that fostering teachers' innovative work behavior (IWB) is pivotal for successful educational change to be realized. Talukder (2012) highlighted that in order to stimulate individual innovativeness, first we need to understand the underlying factors.

Indeed, there is a growing interest in the literature on the determinants of IWB (Chen, Wu, & Chen, 2010; Hammond, Neff, Farr, Schwall, & Zhao, 2011; Li, Liu, Liu & Wang, 2016). Previous research has addressed individual factors, such as personality, to be closely associated with IWB (Steel, Rinne, & Fairweather, 2012; Li et al., 2016). Many researchers concluded that

proactive individuals tend to display more innovative behaviors than less proactive individuals (Beterman & Crant, 1993; Kim, Hon, & Lee, 2010; Seibert, Kraimer, & Crant 2001). However, there are inconsistencies in the literature regarding which personality dimensions are most closely associated with innovative behavior (Abdullah, Omar, & Panatik, 2016; Kwang & Rodrigues, 2002; Chen et al., 2010), and the relationship between proactivity and innovativeness among teachers is under-investigated (Thurlings, Evers, & Vermeulen, 2015).

In addition, a factor that is increasingly perceived as a serious threat for the successful implementation of innovations in the workplace is organizational cynicism (Chiaburu, Peng, Oh, Banks, & Lomeli, 2013; Dean, Brandes, & Dharwadkar; 1998; Polatcan, & Titrek, 2014). This is because cynical individuals tend to deprecate improvement initiatives or even display anti-organizational behavior. However, there is a gap in the literature with regards to the relationship between organizational cynicism and IWB, especially among teachers (Cartwright, & Holmes, 2006). Thus, it is wise to look closer to this relationship, in order to address this gap.

In order to uncover effective ways for sustainable implementation of educational innovations, this study aimed to shed light into the underlying factors of teachers' IWB. Building on previous research, the focus was twofold. The first part focused on determining whether group of innovators exist among teachers based on their IWB, as Rogers' model suggests. This model was used as the framework of this study, since it is widely accepted and utilized in the context of educational innovations as well (Sahin, 2006). The second part focused on investigating the relationship between teachers' IWB and their personality, proactivity and organizational cynicism. For the purposes of this research, teachers from international schools were invited to participate. International schools were selected due to the rising urge for this educational approach and the limited research that exists in this setting (Altbach, & Knight, 2007; Scott, 2005).

Theoretical Framework

This section deals with the concepts that are the central focus of this research. Firstly, it is critically discussed what innovation in education entails, and how it is realized. Secondly, the concept of IWB is defined and discussed. Thirdly, Rogers' model of adoption and diffusion of innovations, which is used as the framework of this study, is described and a detailed description of the adopter categories follows. In the last paragraphs, the constructs of personality, proactivity and organizational cynicism are defined, and the relationships among the key variables are discussed thoroughly.

Innovation in education

Defining innovation has been a challenging endeavor, due to its ambiguous nature and the wide range of literature that views innovation from different perspectives. Barnett (1953, as cited by Zaltman and Lin, 1971), perceived innovation as the novelty of a practice/product, compared with the existing ones. This means that an innovation may be considered as such only for the new adopter (Rogers, 2003). For example, the implementation of a technological tool in an educational setting can be considered as innovative, even if the use of this tool is already widespread in everyday life (e.g. use of smartphone apps in the classroom). However, perceiving innovation in education as the novelty of an element that is incorporated in the process of teaching and learning, would fail to describe its actual meaning. For example, even though introducing and implementing the use of technology in education, such as tablets or interactive boards, can be perceived as innovative, the sole digitization of the traditional learning processes does not seem to add to the transformation of education, nor increases student outcomes (Culatta & Chase, 2015; Darling-Hammond, Zieleszinski, & Goldman, 2016). This means that innovation is something beyond the

use of new technology for tool replacement, e.g. tablets instead of books and digital boards instead of the traditional blackboards.

Rather, as Culatta and Chase (2015) suggested, innovation in education implies reimagining learning. Innovation in education involves the use of non-traditional tools and practices-or the advancement of the existing ones (Vincent-Lancrin et al., 2014), that can improve or transform the experience of teaching and learning altogether. This can be facilitated through entirely new or upgraded courses, practices, materials, tools, content or resources that transform the learning process and improve learning outcomes (McGreal et al., 2013; Mishra, 2014). Innovations in education are measured based on the added-value on the teaching and learning process and the impact they have on student outcomes (Maranville, 1992; Serdyukov, 2017). Massive open online courses (MOOCs), personalized learning, data-use for informed decision-making, are some examples of innovation in education. These innovations approach learning from a different perspective so far, facilitating widespread access (e.g. MOOCs), transforming the decision-making process (e.g. data-use), while positioning the learner and his/her needs in the epicenter (e.g. personalized learning). In order to develop, implement and sustain meaningful innovations like the aforementioned, educational institutions rely on their most important asset, teachers (Sharma 2001; Vähäsantanen, 2015). As such, teachers not only are expected to adopt and integrate educational innovations in their daily practice, but also to actively deal with the challenges that arise by developing new and better ways of teaching.

Innovative Work Behavior

As mentioned above, educational innovations are pivotal for education to respond to the challenges of today's world. Being the actors of educational change, teachers are expected to be innovators

themselves (Sharma 2001; Vähäsantanen, 2015; Van der Heijden et al., 2015). Scholars highlight that, although creativity is essential for the development of innovations, it should not be confounded with individual innovation (De Jong & De Hartog, 2008; Hurt, Joseph, & Cook, 2013; Mumford, 2003). The ability to generate new ideas that are valuable does not necessarily entail the transformation of these ideas into something tangible (Miron, Erez, & Naveh, 2004). In order for ideas to become innovations that are beneficial in a specific work context, and successfully implemented in this context, further actions are required (De Jong & Den Hartog, 2010; Hammond et al., 2011). The construct that best describes the individual behaviors that are fundamental for the development and implementation of innovations in the workplace is *Innovative Work Behavior* (IWB) (Janssen, 2000; Messman & Mulder, 2011).

Although there are different definitions of IWB in the literature, in essence IWB refers to the set of actions and tasks that individuals deliberately undertake in their workplace in order to develop and implement innovations (De Jong, 2006; De Jong & Den Hartog, 2010; Janssen, 2000; Messman & Mulder, 2011, 2012; Thurlings et al., 2015). IWB is multidimensional, meaning that it comprises an array of behaviors that are fundamental for the development and implementation of innovations (Scott & Bruce, 1994; Kanter, 1988; Kleysen, & Street, 2001; De Jong & Den Hartog, 2010). These behaviors correspond to the different stages of the process of developing and implementing innovations in the workplace. The dimensions that IWB is composed of are *opportunity exploration*, *idea generation*, *idea promotion*, and *idea realization* (Messman & Mulder, 2012). As mentioned above, idea generation is an integral component of innovative behavior, however not the only one. Innovative individuals first need to be able to identify a problem or an area of improvement (i.e. opportunity exploration) and then generate ideas directed to tackle the identified challenge. Promotion of these ideas in the work context is then essential in

order to build strong bonds with colleagues, get people onboard with the new idea and assure the necessary support for its realization. The fourth dimension of IWB is idea realization, which refers to the set of activities that individuals actively undertake, in order to implement successfully innovative solutions. This involves materializing what was initially just an idea, incorporating the new solution into the daily practice and adjust or improve accordingly.

The different behaviors, that the construct of IWB is composed of, are equally important for the development and successful implementation of innovations in the workplace (De Jong & Den Hartog, 2010; Messman & Mulder, 2012). Kanter (1988) argued that the connection between the different dimensions of IWB is intricate, suggesting that individuals can be engaged in more than one innovative behavior at the same time. For example, while acting towards the implementation of a new idea, new challenges may arise, which may trigger the generation of new solutions that need to be implemented. Individuals who demonstrate high levels of IWB are those who deliberately search for favorable circumstances in their workplace for innovation development and actively proceed to innovation implementation. Messman and Mulder (2012) suggested that enhancing teachers' IWB is of paramount importance for sustainable educational change. Therefore, it is wise to delve deeper into the determinants of IWB in order to uncover effective ways to trigger and augment teachers' IWB (Talukder, 2012). Important to note is that, according to Rogers (2003), innovations are not adopted instantly nor collectively. Instead, they follow a process from their introduction, to adoption, and the actual implementation by the adopter unit. Some innovations are adopted and diffused fast by the targeted adopter unit, whereas some are entirely ignored or fail to be implemented successfully.

Rogers' Model on the Adoption and Diffusion of Innovations

Rogers (2003) referred to the adoption of an innovation as a decision-making process, where the potential adopter unit decides to either accept or reject an innovation, and subsequently implement it. The adoption of an innovation is highly influenced by the specific characteristics of the innovation itself. In detail, the potential adopter assesses the introduced innovation in terms of its relative advantage, compatibility with the existing system, complexity, testability and visibility of its benefits (Frambach & Schillewaert, 2002; Rogers, 2003; Zaltman and Lin, 1971). Additionally, considering his or her own needs and wants, the potential adopter proceeds in deciding whether to accept or reject the innovation. When an innovation is accepted and implemented, the adopters acquire knowledge on this specific innovation, which then they share with their social system through communication channels (Dibraa, 2015; Rogers, 2003). As more people learn about the innovation, whether this is a process, a product or a service, and its benefits, more people adopt it. This process is termed diffusion of innovations and reflects the summation of the adopters over time. The speed in which an innovation is adopted and diffused (i.e. adoption rate) varies among different innovations and social systems (Rogers, 2003; Meyer, 2004).

As depicted in Figure 1 (Rogers, 2003, p.128), the adoption and diffusion of innovations follows an s-shaped curve, meaning that it is normally distributed among the population. The categorization of the adopters based on the time of adoption of an innovation after its introduction, identifies five main adopter categories (Valente, 1996). The different categories display different behaviors towards the adoption and diffusion of innovations (Rogers, 2003; Sahin, 2006). A detailed description of the five categories follows, derived from the descriptions that Rogers offered. From left to right, the first category are the innovators, representing around 2.5% of the total population. As the name of this category suggests, these are the people who actually innovate. They develop new and useful ideas, approach existing problems from different perspectives, and

put these ideas into practice. Not always respected by their peers and receptive to new ideas, innovators also introduce innovations that come outside of their social system. Early adopters represent about 13.5% of the normal distribution and are those who adopt an innovation at a very early stage, compared to the rest of the population. Their interpretations of innovations play an important role for the adoption of the innovation by their peers. Early and late majority are the following categories and reflect about 68% of the curve. As their name suggests, these categories represent the majority of the population with regards to innovation adoption. Early majority reflects the mass of people who adopt an innovation slightly at an earlier stage than the rest of the population. Late majority reflects the people who wait long enough until most of the population adopts an innovation, before they adopt it as well. Lastly, laggards is the fifth category and represents the remaining 16% of the curve. Laggards adopt an innovation at a very late stage compared with the rest of the population. Generally conservative and not very receptive to newly introduced practices/products, laggards look for proof that an innovation is beneficial before they adopt it.

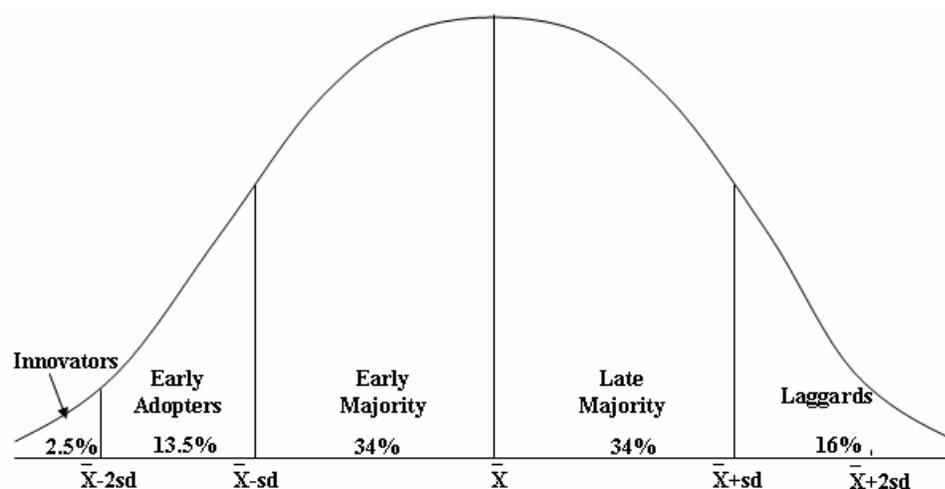


Figure 1. Adopter Categorization on the Basis of Innovativeness. Reprinted from Diffusion of Innovations, 5th edition (p. 128), by E. M. Rogers, 2003, New York, NY: The Free Press. Copyright (c) 2003 by The Free Press.

Rogers' (2003) model on the adoption and diffusion of innovations is widely used for the research of innovations in various disciplines (Kaur & Kaur, 2010; Lundblad, 2003), and for educational innovations as well (Sahin, 2006). However, it is important to highlight that Rogers' model has received some criticism by scholars, who pinpointed that it is utopic to assume that all innovations follow this normal curve (Mahajan, Muller, & Srivastava, 1990; Lundblad, 2003; Lyytinen, & Damsgaard, 2001). Due to its wide applicability and despite the criticism, this model was used as framework of the current research in order to study teachers' IWB. The first research question that this study attempted to answer was whether Rogers' model applies to the construct of IWB. To answer this question, it was investigated whether groups of innovators can be determined among teachers based on their IWB, as Rogers' model suggests. Considering that the construct of IWB encompasses behaviors that correspond to the different stages of the innovating process, it was hypothesized that the categorization suggested by Rogers would be evident among the participants of this study based on their IWB.

Determinants of IWB

As discussed above, the success of sustainable educational innovations depends greatly on individuals and their active contribution to the development and implementation of such innovations. However, individuals vary significantly from each other in terms of their willingness and potential to innovate (Hammond et al., 2011 Sarel & Marmorstein, 2003). Therefore, studying individual differences is of great importance in order to understand individual behavior towards innovation (Yesil, & Sozbilir, 2013).

Personality. Previous studies focused on individual innovativeness, have frequently addressed personality to be closely associated with individual's tendency to innovate (Steel et al., 2012; Li et al., 2016). Individuals' behaviors are shaped by their personality characteristics, which influence innovative behavior in different ways. Based on the Five Factor Model (FFM), personality is conceptualized and studied through five personality traits, namely openness to experience, conscientiousness, agreeableness, extraversion and neuroticism (Patterson, Kerrin, & Gatto-Roissard, 2009; Yesil, & Sozbilir, 2013). Every individual's personality is reflected through a mixture of these five dimensions (Atta, Ather, & Bano, 2013 Zaidi et al., 2013). What is intriguing is the fact that research is neither definite nor consistent regarding which personality traits can best predict individuals' innovative behavior. In addition, there is minimal research of this relationship in work contexts (Hammond et al., 2011). A detailed description of the relationship between the different personality traits and innovation follows.

Openness to experience is the personality trait that best reflects individuals' creativity (George & Zhou 2001; Kwang & Rodrigues, 2002; Steel et al., 2012). The latter is widely accepted as one of the main influencers of innovation on the individual level, especially towards generating new ideas (Miron et al., 2004; Steel et al., 2012). Being open to new experiences suggests that individuals are not intimidated by the unknown and are less likely to be hesitant when they find themselves before changes. This attitude towards novelty and change is imperative for the development of innovations (Hammond et al., 2011; Patterson, et al., 2009). In addition, being generally open to experiences suggests that one has intellectual curiosity. Previous research among educators concluded that curiosity is an enabler of innovation, since curious teachers had the tendency to be more creative and innovative in their work (Messman & Mulder, 2011; Horng,

Hong, Chanlin, Chang, & Chu, 2005). Thus, it was hypothesized that openness to experience is a positive predictor of IWB.

Apart from being creative, scholars suggested that continuous and long-term effort is required for successful implementation of innovations (Fehr, 2009; Steel et al., 2012). Conscientiousness reflects individuals' tendency to set goals and exhibit such behaviors so as to achieve them. For example, being disciplined, consistent, neat and systematic. Although these characteristics seem to be of value for innovation implementation, the literature offers contradicting conclusions with regards to individual innovativeness. Some researchers have identified conscientiousness to be closely related with the development of new solutions (Aronson, Reilly, & Lynn, 2008; Zhao, & Seibert, 2006), while other researchers concluded otherwise (Patterson et al., 2009). Considering that the successful and sustainable implementation of educational innovations requires active and purposeful contribution of individuals, it is argued that conscientious teachers would display higher levels of IWB. Thus, it was hypothesized that conscientiousness is a positive predictor of IWB.

Research on the diffusion of innovations and individual innovative behavior have extensively highlight the important role of social interactions (Messman & Mulder, 2012; Rogers, 2003; Woodland, Barry, & Crotts, 2014). Smooth social interactions allow for knowledge sharing and strong bonding with peers towards the development and implementation of innovations (Hakkarainen, Palonen, Paavola, & Lehtinen, 2004; Messman & Mulder, 2012). Agreeableness refers to characteristics such as sympathetic, kind and cooperative, which promote smooth social interactions (Li et al., 2016; Steel et al., 2012). Although there are studies suggesting that this personality trait may inhibit individual creativity (George & Zhou, 2001; Patterson et al., 2009), being agreeable seems to be in favor of the success of innovative initiatives in the workplace (Chen

et al., 2010). Especially when the implementation of an innovation requires the active contribution of many members of a social system like the one in a school setting. Thus, it was hypothesized that agreeableness is a positive predictor of IWB.

Extravert individuals are talkative, enthusiastic and assertive. These characteristics imply that individuals high on extraversion enjoy social interactions and actually do well in such situations (Thompson, 2008). Feist, (1998) suggested that instead, being an introvert is in favor of innovation. Arguably, social interactions are of great importance for innovations. In that sense, extraversion seems to be positively associated with individual innovativeness (Chen et. Al, 2010; Kwang & Rodrigues, 2002). Thus, it was hypothesized that extraversion is a positive predictor of IWB.

The last trait of the FFM of personality is neuroticism. Neurotic individuals are prone to be anxious, aggressive, irritable and self-conscious. Conclusions on both extremes exist in the literature regarding the relationship between neuroticism and innovation. Feist (1998) argued that neuroticism is positively related with creativity among artists. However, a big body of the literature suggests a negative association, or not at all, between neuroticism and individual innovation (Taggar, 2002). The anxiety that neurotic individuals are experiencing seems to be disadvantageous towards innovativeness (Patterson et al., 2009). Thus, it was hypothesized that neuroticism is a negative predictor of IWB.

The literature suggests that when research on personality is conducted in a working environment it is wise to combine it with further personality constructs, such as proactivity (Li et al., 2016). According to Bateman & Crant (1993), proactivity refers to individuals' tendency to initiate change in a structured and purposeful way. De Vries, Wawoe and Holtrop (2016) argued that proactivity reflects features that are also reflected though openness to experience, extraversion

and conscientiousness. In detail, being open towards novelty and change, being energetic towards initiatives, and engaging in behaviors to realize changes in a structured and disciplined manner, not only are characteristics embedded in the construct of proactivity, but also reflected through openness to experience, extraversion, and conscientiousness respectively. Tornau and Frese (2013) also supported this view, concluding that proactivity is closely related with the FFM traits mentioned above. Proactivity is considered to have a positive association with innovative behavior (Kim et al., 2009, 2010; Pérez-Luño, Wiklund, & Cabrera, 2011; Seibert et al., 2001). Highly proactive individuals initiate change, while less proactive individuals-even those who are able to adapt to changing situations-do not initiate such changes (Parker, Bindl, & Strauss, 2010; Parker, & Wang, 2015). Instead of merely adapting to changing situations, proactive individuals are the ones who introduce such changes. They actively search for areas of improvement and engage in improvement efforts. Furthermore, highly proactive individuals tend to develop themselves through learning, and constantly explore opportunities for innovation in the workplace, while less proactive individuals do not demonstrate such behavior (Seibert et al., 2001; Kim et al., 2009, 2010). Therefore, it was hypothesized that proactivity is a positive predictor of IWB.

Organizational Cynicism. Cynicism has been defined as an attitude of distrust towards others' intentions (Navia, 1996), while the term originates in ancient Greek philosophers (i.e. cynics). Without negating its relation with personality, organizational cynicism is perceived as a condition, rather than a personality characteristic (Karadag, Kiliçoglu, & Yilmaz, 2014; Pope, Butcher, & Seelen, 1993). Dean, Brandes and Dharwadkar (1998) argued that perceiving organizational cynicism as a condition indicates that it is shaped by the experiences one has already acquired in the workplace and will be shaped accordingly by the future ones. Organizational cynicism has been proven to be generated by failed change and improvement efforts in the

workplace (Ferres & Connell, 2004; Shapiro, 1996). Poor supportive system and imbalance of power in organizations can also lead to organizational cynicism (Cartwright, & Holmes, 2006). With respect to organizational cynicism towards change, cynical employees instead of actively participate in the initiative of their organization, they rather “stay still”, while doubting the success and the benefits of the change itself. Being cynical towards novelty bears an uncertainty towards facilitators’ competencies, lack of trust in people’s honest incentives and negative emotions such as disappointment (Nafei, 2013; Wanous, Reichers, & Austin, 2000). It is proposed that the pessimism towards something new and the perception of possible failure that accompany cynicism could make those with high levels of cynicism resistant towards engaging in developing and implementing innovations in their workplace. Thus, it was hypothesized that organizational cynicism is a negative predictor of IWB.

Research Questions

Based on the literature discussed in the above section, the purpose of this study was to shed light into teachers’ IWB in international schools settings, using Rogers’ (2003) model as framework. Specifically, the focus of this research was twofold. The first part aimed to determine whether Rogers’ model applies to the construct of IWB. The second part aimed to investigate the relationship between teachers’ IWB and their personality, and organizational cynicism. Therefore, the following research questions were formulated:

RQ1: To what extent does Rogers’ model of adoption and diffusion of innovations apply to the construct of IWB?

RQ2: To what extent can personality and organizational cynicism predict teachers’ IWB, in international schools?

Subsequently, the following hypotheses were formulated:

1. The five innovation-adopter categories as described by Rogers are evident among the participants, based on their IWB.
2. Openness to experience, extraversion, conscientiousness, agreeableness and proactivity are positive predictors of IWB, meaning that participants with high scores on these traits tend to display higher levels of innovativeness than those with lower scores on these traits.
3. Neuroticism is a negative predictor of IWB, meaning that participants with low scores on this trait tend to display higher levels of innovativeness than those with higher scores on this trait.
4. Organizational cynicism is a negative predictor of IWB, meaning that participants with higher levels of organizational cynicism tend to display lower levels of innovativeness, compared with those with lower levels of organizational cynicism.

Methods

Research Design

The goal of the research was to shed light into teachers' IWB. The first part focused on identifying the applicability of Rogers' (2003) model on the construct of IWB. It was investigated whether the adopter categories as introduced by Rogers are evident among the teachers, based on their IWB. The second part focused on identifying the relationship between personality, organizational cynicism, and IWB, among teachers in international schools. For this reason, a quantitative, cross-sectional and non-experimental research design was used. The IWB of individuals was the dependent variable of this study, while personality and organizational cynicism were the independent variables. A survey research design was used for the purposes of this study, since it

allows for a large group of participants and is a common way to measure individual factors (Budah, 2011).

Respondents

To answer the main research questions, the study collected data through convenience sampling, since it is a simple and fast way to approach possible available participants (Budah, 2011). Teachers from five international schools were informed of the goal of the research and participated with their consent. In total, 61 participants out of the possible 210 completed an online questionnaire. There were 18 males (29.5%) and 43 females (70.5%), ranging in age from 25 to 65, with a mean of 43.33 and a standard deviation of 11.49. Participants' education ranged from High school to PhD, while more than half of the respondents were Master's degree holders (54.1%). The other half's highest education was Bachelors' degree (44.30%). Among the participants, there were 47 teachers (77%), 3 school leaders (4.9%) and 11 who reported both roles (18%). Fifty-three (86.9%) of the participants had been actively involved in at least one process of change or renewal in their work recently. Almost half of them (45.3%) reported partial attainment of the intended goals, while more than half of them (73.8%) reported that this process is still in progress.

Instrumentation

An online self-rating questionnaire was used for the purposes of this study, including demographic characteristics (i.e. gender, age, educational level and role) and construct specific questions. A detailed description of each construct-specific instrument can be found below.

Innovative work behavior. To measure participants' IWB, an adapted version of the instrument developed by Messmann and Mulder (2012) was used, translated to English. The

instrument includes in total 29 questions. For the first 24 items, participants had to indicate to what extent they agree with each statement, using a 6 point Likert scale ranging from *never* (1) to *very often* (6). This instrument measures the different domains of IWB, namely *opportunity exploration* (e.g. ‘Keeping up with the latest developments in the organizations’), *idea generation* (e.g. ‘Expressing new ideas on how to solve a problem’), *idea promotion* (e.g. ‘Promoting the application of a new solution in one’s work context’) and *idea realization* (e.g. ‘Systematically reflecting on experiences gained during the realisation of an idea’). Five additional questions were directed towards participants’ prior experience with innovative initiatives (e.g. ‘Have you been actively involved in at least one process of change or renewal in the context of your work in the last three months?’), to establish connection with the context. Participants, who did not have experience with such initiatives, were allowed to skip the questions that followed, related to the process and outcomes of these initiatives. When tested, the instrument showed high reliability ($\alpha = .94$) for the total scale and somewhat high ($\alpha = .75, \alpha = .87, \alpha = .81, \alpha = .87$) for the four domains respectively, reflecting overall consistency of the measurement.

Personality traits. Participants’ personality was explored using an adapted version of ‘The Quick Five’ measurement, developed by Vermulst and Gerris (2005) based on Goldberg (1992), translated to English. The instrument includes 30 adjectives that reflect the different personality traits (6 adjectives per trait); *openness to experience* (e.g. versatile), *conscientiousness* (e.g. organized), *extraversion* (e.g. talkative), *agreeableness* (e.g. cooperative) and *neuroticism* (e.g. nervous). Using a 7 point Likert scale ranging from *completely not true* (1) to *completely true* (7), the participants indicated to what extent they identify themselves with each adjective present. Cronbach’s alpha was acceptable for each trait, indicating reliability of the measurement. In detail,

$\alpha = .79$ for Conscientiousness, $\alpha = .86$ for Extroversion, $\alpha = .79$ for Agreeableness, $\alpha = .70$ for Openness to experience and $\alpha = .68$ for Neuroticism.

Proactivity. Proactivity was measured using the scale developed by de Vries et al. (2016). Using a 5 point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5), the participants had to indicate to what extent they agree with each of the 8 items included (e.g. ‘I have well developed plans to improve things’). When tested, the scale showed reliability of $\alpha = .80$, indicating consistency of the measurement.

Organizational Cynicism. The level of organizational cynicism was measured using the scale developed by Wanous, Reichers and Austin (2000) to measure cynicism about organizational change. In total, the scale includes 12 items, measuring *pessimism* (e.g. ‘Most of the programs that are supposed to solve problems around here will not do much good’), *dispositional attribution* (e.g. ‘The people responsible for solving problems around here do not try hard enough to solve them’) and *situational attribution* (e.g. ‘The people responsible for fixing problems around here cannot really be blamed if things do not improve’), regarding the likelihood of a change to fail (4 items each). A 5 point Likert scale was used to indicate the level of agreement with each of the statements, ranging from *strongly disagree* (1) to *strongly agree* (5). The reliability of this instrument was high for the total scale ($\alpha = .87$) and the different domains, with exception the domain of situational attribution ($\alpha = .83$, $\alpha = .89$, $\alpha = .61$ respectively).

Procedure

The first step was to ensure approval of the research from the Ethic Commission of the University of Twente, since humans were involved in the study. In order to gather the required data, the directors of multiple international school from around the world were contacted via email. They were informed of the purpose of this research and invited to participate together with the teachers

of their school. After the consent of the schools to participate, an invitation email was sent to all participants, including a unique link to access the online questionnaire. Individual consent was ensured as the first step before completing the questionnaire. In addition, two reminders were sent via email to those who had not completed the questionnaire yet. The completion time for the questionnaire was around 15 minutes. The data were gathered during a two-month period and then analyzed.

Data Analysis

Gathered data were quantitative and analyzed accordingly on SPSS version 23. Preliminary analysis prepared the data for further analyses. Firstly, descriptive statistics were obtained to provide an overview of the variables. Secondly, correlations were calculated to examine the relationship between the variables of this study. In order to answer the first research question and investigate the structure of the sample based on their IWB, cluster analysis was conducted. One-way ANOVA was then calculated to compare the clusters and validate the result. Finally, to examine the second research question of the study, regression analysis was utilized.

Results

The focus of this study was twofold. The first part of this study aimed to determine whether distinct groups exist among teachers in international schools based on their innovative work behavior, using Rogers' (2003) model as framework. The second part aimed to determine whether there is a relationship between teachers' IWB and their personality, level of proactivity and organizational cynicism. First, descriptive statistics of all variables are presented and discussed. Then, relational analyses among the variables are presented and explained.

Description of Study Variables

The gathered data were analyzed on participants' scores on IWB, personality traits (i.e. openness to experience, conscientiousness, agreeableness, extraversion, and neuroticism), proactivity and organizational cynicism. In order to investigate the relationship between the variables that were the focus of this research, Pearsons' correlation was conducted. The results of the correlational analysis between the dependent and independent variables are shown in Table 1. In the first two columns, descriptive statistics for each variable are presented. Based on the results certain aspects of teachers' personality seem to be strongly correlated with their IWB. In detail, openness to experience $r = .34, p = .008$, agreeableness $r = .27, p = .036$, conscientiousness $r = .27, p = .033$, and neuroticism $r = .28, p = .029$, were found to display a strong positive correlation with IWB. This means that on average, participants with higher scores on openness to experience are likely to have higher scores on IWB, compared to those with lower scores on openness to experience. The same stands for agreeableness, conscientiousness and neuroticism. Proactivity was also found to display a strong positive relationship with IWB $r = .44, p < .001$. This indicates that participants with high scores on proactivity tend to have higher scores on IWB compared to those with lower scores on proactivity.

Table 1

| | | <i>Intercorrelation of IWB, Personality Traits, Proactivity and Organizational Cynicism (n = 61)</i> | | | | | | | | | | | | | | | | | |
|-------------------------------|-------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|------|------|
| Variable | M | (SD) | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. | |
| 1. Innovative work behavior | 4.56 | (.73) | - | | | | | | | | | | | | | | | | |
| 2. Opportunity exploration | 4.55 | (.71) | .90* | - | | | | | | | | | | | | | | | |
| 3. Idea generation | 4.74 | (.83) | .91* | .80* | - | | | | | | | | | | | | | | |
| 4. Idea promotion | 4.39 | (.86) | .89* | .69* | .75* | - | | | | | | | | | | | | | |
| 5. Idea realization | 4.58 | (.82) | .89* | .75* | .72* | .71* | - | | | | | | | | | | | | |
| 6. Extraversion | 4.90 | (1.20) | .18 | .13 | .23 | .17 | .10 | - | | | | | | | | | | | |
| 7. Agreeableness | 5.62 | (.75) | .27* | .30* | .26* | .20 | .22 | -.04 | - | | | | | | | | | | |
| 8. Conscientiousness | 5.13 | (.94) | .27* | .29* | .24 | .19 | .26* | -.10 | .24 | - | | | | | | | | | |
| 9. Neuroticism | 3.41 | (.90) | .28* | .25* | .24 | .31* | .19 | -.17 | -.11 | -.10 | - | | | | | | | | |
| 10. Openness to experience | 5.33 | (.75) | .34* | .31* | .29* | .34* | .26* | .35* | .09 | -.04 | -.02 | - | | | | | | | |
| 11. Proactivity | 3.71 | (.52) | .44* | .31* | .37* | .43* | .46* | .24 | -.10 | .34* | -.06 | .29* | - | | | | | | |
| 12. Organizational Cynicism | 2.59 | (.67) | -.12 | -.05 | -.19 | -.07 | -.10 | -.22 | .07 | .06 | .31* | -.04 | -.14 | - | | | | | |
| 13. Pessimism | 2.50 | (.86) | -.24 | -.13 | - | -.21 | -.14 | -.19 | .05 | .02 | .16 | -.06 | -.19 | .91* | - | | | | |
| 14. Dispositional attribution | 2.43 | (.98) | -.05 | -.04 | -.07 | -.01 | -.07 | - | .01 | .13 | .32* | -.10 | -.12 | .87* | .75* | - | | | |
| 15. Situational attribution | 2.82 | (.65) | .03 | .06 | -.03 | .08 | -.01 | -.04 | .12 | -.03 | .25* | .10 | .00 | .60* | .40* | .21 | - | | |
| 16. Age | 43.33 | (11.49) | -.11 | -.13 | -.18 | -.11 | .02 | -.19 | .26* | -.11 | .01 | -.15 | - | .29* | .07 | .07 | -.07 | -.07 | .27* |

* $p < .05$

Classification of Innovator Categories Based on IWB

Cluster analysis was conducted in order to answer the first research question; *To what extent does Rogers' model of adoption and diffusion of innovations apply to the construct of IWB?* Participants' scores on each of the 24 items measuring the four domains of IWB were used to investigate whether defined groups or *clusters* exist between the respondents. A hierarchical clustering method was applied to determine the number of clusters. This method was preferred over the existing methods for clustering, because it is the only method that does not require the researcher to pre-define the number of clusters to be obtained (Yim & Ramdeen, 2015). Therefore, this was the most suitable method for exploring the structure of the sample, avoiding at the same time to predestine the result. Ward's minimum variance criterion method and the squared Euclidean distance was used to calculate participants' similarities and a hierarchical agglomerative analysis was employed to establish clusters. These methods were used in order to obtain distinct but as homogenous clusters as possible (Malhotra, 2007; Roy, Kar, & Das, 2015). Non-hierarchical clustering was then conducted to validate the outcome (Keen, Welzels, Ruyter, Ko de., & Feinberg, 2004).

The outcome from the hierarchical cluster analysis revealed four clusters among the participants based on their IWB, and non-hierarchical cluster analysis confirmed this result. One-way ANOVA and post-hoc Bonferroni correction was then conducted to further validate the results by comparing the four clusters in terms of their scores on IWB. The results showed that IWB varied significantly across clusters, $F(3, 57) = 162.80, p < .001$. Post-hoc comparison revealed that the IWB mean score of each cluster was significantly different from the rest. In detail, the four clusters were found to be in a successive order in terms of participants' scores on IWB and on the four different domains, namely Opportunity Exploration, Idea Generation, Idea Promotion and

Idea Realization, separately. Table 2 presents the means and standard deviations for each cluster on IWB and on the four domains separately. For the sake of avoiding confusion, the obtained clusters were labeled on the basis of the naming used by Rogers (2003), taking into account each cluster's IWB mean score. *Late majority* had on average the lowest scores on IWB ($M = 3.34$, $SD = .28$), followed by *early majority* ($M = 4.10$, $SD = .25$). *Early adopters* ($M = 4.94$, $SD = .21$) outperformed both *late* and *early majority*. In turn, *innovators* had on average the highest score on IWB ($M = 5.46$, $SD = .25$), compared with the other clusters. Similarly, the successive pattern described above is apparent among the clusters for each of the four domains of IWB separately.

Table 2

Descriptive statistics of clusters

| | Innovators ($n = 11$) | | Early Adopters ($n = 23$) | | Early Majority ($n = 19$) | | Late Majority ($n = 8$) | |
|-----|----------------------------|---------------|--------------------------------|---------------|--------------------------------|---------------|------------------------------|---------------|
| | <i>M</i> | (<i>SD</i>) | <i>M</i> | (<i>SD</i>) | <i>M</i> | (<i>SD</i>) | <i>M</i> | (<i>SD</i>) |
| OE | 5.35 | (.32) | 4.89 | (.42) | 4.02 | (.41) | 3.71 | (.42) |
| IG | 5.57 | (.26) | 5.15 | (.38) | 4.35 | (.42) | 3.33 | (.77) |
| IP | 5.52 | (.32) | 4.69 | (.36) | 3.96 | (.49) | 2.98 | (.43) |
| IR | 5.41 | (.40) | 5.02 | (.44) | 4.07 | (.39) | 3.38 | (.69) |
| IWB | 5.46 | (.25) | 4.94 | (.21) | 4.10 | (.25) | 3.34 | (.28) |

As mentioned above, four clusters were found instead of Rogers' (2003) five categories. This means that the cluster solution that was obtained in this study was not identical with Rogers' model. However, it is important to note two things. First, as depicted in Figure 2, the categorization of the participants of the current study based on their IWB follows a normal distribution, resembling Rogers' model. Second, it appears that no laggards existed among the participants of this study. A closer look on the mean scores of each cluster, endorses this judgement. All clusters scored high on IWB, and even late majority, which had the lowest mean score compared to the rest of the clusters, scored somewhat high on IWB as well.

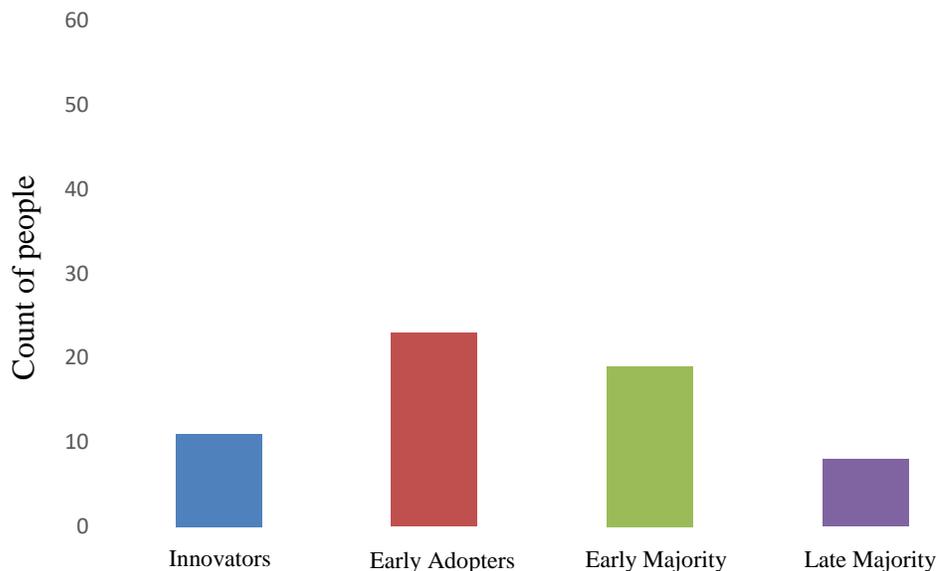


Figure 2. Distribution of Clusters

Table 3 displays the demographic characteristics of each cluster. Generally, the clusters seem to be quite similar with each other. Females were overrepresented in all clusters compared to males, while the level of education was generally high across clusters. This is due to the original composition of the sample, with more than half being females and Masters' degree holders. A closer inspection of the demographic characteristics between the clusters provides some interesting hints. Although participants with/or a leader role were underrepresented, it is still interesting that late majority was purely comprised of participants with solely a teacher role. Another interesting characteristic among the participants of the four clusters is age. It seems that innovators and early adopters were relatively younger than early and late majority. To explore the significance of these hints, further analysis was conducted. One-way ANOVA showed no significant differences between the clusters based on their age, $F(3, 57) = .739, p = .533$, suggesting that younger participants were not necessarily more innovative than older participants. Similarly, chi-square test

for independence showed no significant differences between the clusters based on their role, $\chi^2 (2) = 5.29, p = .507$. This means that participants' age and the proportion of the different roles across the clusters was not significantly different.

Table 3

Demographic Characteristics of Clusters as a Percentage of the Sample (Census Data in Parenthesis)

| | Innovators (n = 11) | | Early Adopters (n = 23) | | Early Majority (n = 19) | | Late Majority (n = 8) | |
|-------------------------|------------------------|-----|----------------------------|------|----------------------------|------|--------------------------|-----|
| Percentage of responses | 18% | | 37.7% | | 31.1% | | 13.3% | |
| Gender | | | | | | | | |
| Male | 18.2% | (2) | 26.1% | (6) | 42.1% | (8) | 25% | (2) |
| Female | 81.8% | (9) | 73.9% | (17) | 57.9% | (11) | 75% | (6) |
| Age | | | | | | | | |
| 25-35 | 54.5% | (6) | 26.1% | (6) | 21.1% | (4) | 37.5% | (3) |
| 36-45 | 9.1% | (1) | 47.8% | (11) | 26.3% | (5) | 12.5% | (1) |
| 46-55 | 18.2% | (2) | 17.4% | (4) | 21.1% | (4) | 25% | (2) |
| 56-65 | 18.2% | (2) | 8.7% | (2) | 31.6% | (6) | 25% | (2) |
| Education | | | | | | | | |
| High school | - | - | - | - | - | - | 12.5% | (1) |
| Vocational School | - | - | 4.3% | (1) | - | - | 12.5% | (1) |
| Bachelor | 36.4% | (4) | 39.1% | (9) | 42.1% | (8) | 37.5% | (3) |
| Master | 63.6% | (7) | 56.5% | (13) | 52.6% | (10) | 37.5% | (3) |
| PhD | - | - | - | - | 5.3% | (1) | - | - |
| Role | | | | | | | | |
| Teacher | 63.6% | (7) | 73.9% | (17) | 78.9% | (15) | 100% | (8) |
| Leader | 9.1% | (1) | 8.7% | (2) | - | - | - | - |
| Both | 27.3% | (3) | 17.4% | (4) | 21.1% | (4) | - | - |

Determinants of IWB

Multiple Regression analysis was calculated to examine the second research question; *To what extent can personality and organizational cynicism predict teachers' IWB, in international schools?* Based on the results of the cluster analysis, the decision was made to treat IWB as a continuous variable, since the scores of each cluster on the four domains of IWB were in a successive order (see Figure 3). Preliminary analyses ensured no violation of the assumptions that

need to be met for regression analysis (Pallant, 2013). No multicollinearity was detected among the variables, thus all the initial variables were included in the analysis. Backward elimination was used, in order to reduce the set of predictors by eliminating the non-significant factors one by one and obtain a model with the best set of predictors (Tabachnick & Fidell, 2013).

Table 4 shows the results of the regression analysis, including all five models produced. The first model included all the variables, while the second model excluded extroversion due to its low impact on the model ($b = .06$, $SE = .07$, $\beta = .09$, $t(52) = .85$, $p = .396$). In turn, the third model excluded conscientiousness due to the same reason ($b = .11$, $SE = .09$, $\beta = .14$, $t(53) = 1.30$, $p = .200$), and the fourth model excluded openness to experience ($b = .18$, $SE = .10$, $\beta = .19$, $t(54) = 1.81$, $p = .076$). Lastly, organizational cynicism ($b = -.22$, $SE = .11$, $\beta = -.20$, $t(55) = -1.94$, $p = .057$) was excluded, resulting in the model with the best fit. The final model was significant $F(3, 57) = 13.48$, $p < .001$, with an adjusted R^2 of .38, meaning that the set of variables included in this model explained 38% of the total variance of IWB in the sample. Proactivity ($b = .70$, $SE = .14$, $\beta = .50$, $t(56) = 4.89$, $p < .001$), agreeableness ($b = .35$, $SE = .10$, $\beta = .36$, $t(56) = 3.49$, $p = .001$) and neuroticism ($b = .28$, $SE = .08$, $\beta = .35$, $t(56) = 3.45$, $p = .001$) were the factors included in the final model. This means that teachers' level of proactivity, agreeableness and neuroticism can predict the innovative behavior that they display in their workplace. Proactivity had the biggest impact on the model, followed by agreeableness and neuroticism. All three variables were positively associated with IWB. In detail, this means that teachers with higher levels of proactivity tend to display higher levels of IWB than those with lower levels of proactivity. Similarly, teachers with higher levels of agreeableness tend to display higher levels of IWB compared to those with lower levels of agreeableness. The same stands for the neuroticism, meaning that teachers with

higher levels of neuroticism tend to display higher levels of IWB, than those with lower levels of neuroticism.

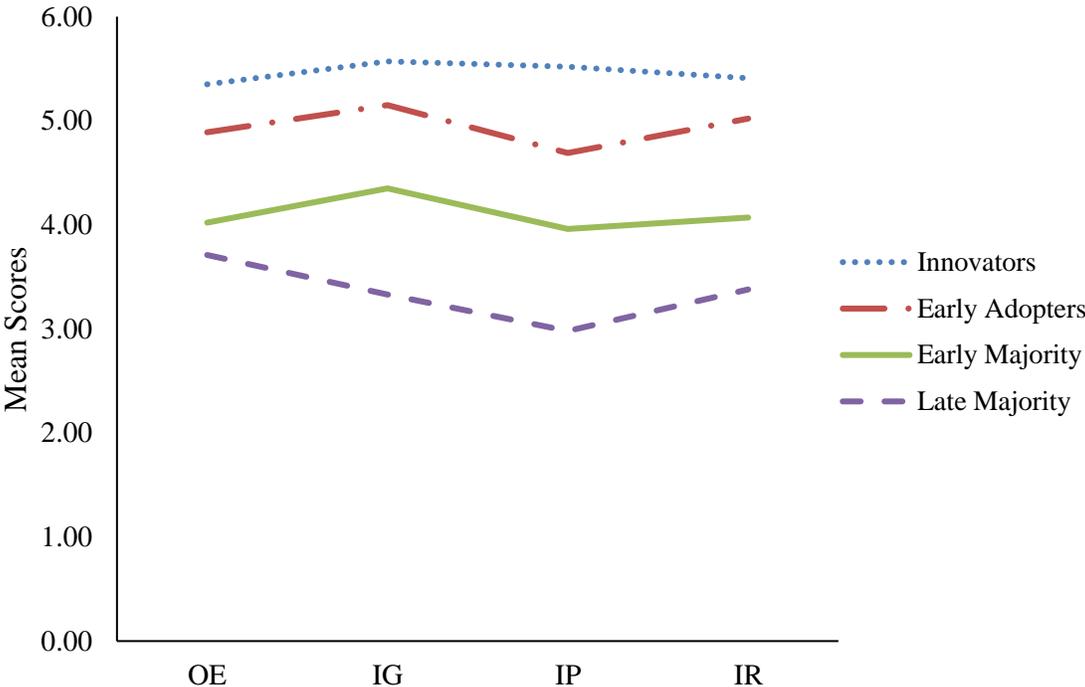


Figure 3. Mean scores of the obtained clusters on the four domains of IWB

Table 4

Regression Analysis of IWB, Personality, Proactivity and Organizational Cynicism

| Variable | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 | | | Model 5 | | | | | | | | | | | | |
|-------------------------|----------|-----------|----------|----------|----------|-----------|----------|----------|----------|-----------|----------|----------|----------|-----------|----------|----------|-----|------|-------|-------|-----|-----|-----|------|-------|
| | <i>b</i> | <i>SE</i> | <i>t</i> | <i>p</i> | | | | | | | | | |
| Agreeableness | .31 | .10 | .32 | 3.05 | .004 | .30 | .10 | .32 | 3.04 | .004 | .34 | .10 | .35 | 3.57 | .001 | .37 | .10 | .37 | 3.75 | <.001 | .35 | .10 | .36 | 3.49 | .001 |
| Conscientiousness | .12 | .09 | .16 | 1.40 | .166 | .11 | .09 | .14 | 1.30 | .200 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Neuroticism | .35 | .08 | .44 | 4.19 | <.001 | .34 | .08 | .42 | 4.13 | <.001 | .33 | .08 | .41 | 4.00 | <.001 | .33 | .08 | .42 | 3.96 | <.001 | .28 | .08 | .35 | 3.45 | .001 |
| Openness to experience | .18 | .10 | .19 | 1.71 | .092 | .20 | .10 | .21 | 2.04 | .046 | .18 | .10 | .19 | 1.81 | .076 | - | - | - | - | - | - | - | - | - | - |
| Proactivity | .48 | .16 | .34 | 3.00 | .004 | .50 | .16 | .36 | 3.21 | .002 | .59 | .14 | .42 | 4.10 | <.001 | .67 | .14 | .47 | 4.77 | <.001 | .70 | .14 | .50 | 4.89 | <.001 |
| Extraversion | .06 | .07 | .09 | .85 | .396 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Organizational cynicism | -.22 | .11 | - | - | .054 | - | .11 | -.22 | -2.11 | .039 | -.22 | .11 | -.20 | -1.95 | .056 | -.22 | .11 | -.20 | -1.94 | .057 | - | - | - | - | - |
| Adjusted R ² | | | | .44 | | | | .44 | | | | .44 | | | | .41 | | | | .38 | | | | | |
| Model F-value | | | | 7.73 | | | | 8.94 | | | | 10.26 | | | | 11.54 | | | | 13.48 | | | | | |

Discussion

This section starts with a thorough discussion on the findings of this research. Based on the results, conclusions are presented, along with explanations on the findings. Following, the limitations of this study are analyzed and suggestions for future research are provided. Finally, the possible theoretical and practical implications of the study are discussed.

Classification of Innovator Categories Based on IWB

The focus of this study was teachers' IWB. The goal was to shed light into the underlying factors of IWB among educators, in order to foster innovativeness in schools. The study was designed on the basis of Rogers' (2003) model of adoption and diffusion of innovations, which was used as framework. Given the wide applicability of this model, the first part focused on investigating whether Rogers' model, which identifies five innovation-adopter categories, applies to the concept of IWB. This was examined by exploring the structure of teachers in international schools, based on the innovative behavior they display in their workplace. The assumption was made that the categorization suggested by Rogers would be evident among the participants of this study based on their IWB.

The findings suggest that although groups were found among teachers in international schools based on their IWB, the initial assumption was only partially confirmed. Four groups instead of Rogers' (2003) five were evident among the participants. After comparing the model that emerged in this study with the one introduced by Rogers, some similarities were found. The different groups were found to be in a successive order in terms of their IWB, meaning that they displayed different levels of innovativeness, as with Rogers' categories. The resemblance with Rogers' model is also apparent when inspecting the distribution of the obtained clusters among the participants. Similar with Rogers' model, the categorization of teachers based on their IWB followed an s-shaped curve, suggesting normal distribution.

However, the number of the obtained cluster was four instead of five. This difference can be explained by the fact that the participants of this study displayed generally high scores of innovativeness, suggesting that there were no laggards in the sample. Van der Vegt and Janssen (2003) suggested that diverse groups tend to be more innovative than less diverse groups. Thus, it is likely that the cultural diversity of teachers in international schools (Cambridge & Thompson, 2004) could explain the high levels of innovativeness among the participants of this study.

Rogers (2003) on the characteristics of the different adopter categories argued that early adopters tend to be leaders in their social system, affecting the decision process of the rest of the members by adopting an innovation at such an early stage. Similarly, Fullan (2006) and Harris (2010) suggested that leaders tend to display high levels of innovativeness. Moreover, previous studies suggested that innovators generally tend to be young in age (Im, Bayus, & Mason, 2003; Sarel & Marmorstein, 2003; Yilmaz & Bayraktar, 2014). In the current study, late majority was purely comprised of participants with solely a teacher role in their school, while the rest of the innovator groups also included participants who hold (partially) a leader role. Noteworthy is that participants with purely or partially a leader role were underrepresented in the sample. On another note, innovators and early adopters were relatively younger than early and late majority. However, no significant differences were found between the clusters in terms of their role or age. Thus, the above only remain hints rather than concrete conclusions on the alignment between the characteristics of the obtained groups and those introduced by Rogers.

Determinants of IWB

The second part of this study focused on investigating the relationship between teachers' personality, organizational cynicism and their IWB. The aim was to discover the best set of

predictors of teachers' IWB. Based on the literature, with regards to teachers' personality it was hypothesized that openness to experience, agreeableness, conscientiousness, extraversion and proactivity would be good predictors of IWB, displaying a positive relationship (Kim et al. 2010; Li et al., 2016; Seibert et al. 2001; Steel et al., 2012). Neuroticism and teachers' level of organizational cynicism were also hypothesized to have predictive power over IWB, displaying a negative association (Taggar, 2002).

The analysis showed proactivity, agreeableness and neuroticism as the best set of predictors for teachers' IWB, explaining a fair amount of their innovative behavior in the workplace. Notable is that proactivity was the most profound predictor, followed by agreeableness and neuroticism. These findings are partially in line with the initial assumptions. Regarding proactivity, the findings of this study are in line with Chen et al. (2010) and Li et al. (2016), who found that proactive individuals are more likely to actively contribute to the development and implementation of innovations in their workplace than less proactive individuals. As Seibert et al. (2001) and Kim et al. (2009, 2010) argued, proactive individuals initiate change and plan their actions ahead of time in order to successfully implement these changes, displaying higher levels of IWB than less proactive individuals.

When it comes to agreeableness, the findings are again in line with previous research, suggesting a positive association with innovativeness and predictive power (Chang, & Chang, 2010; Steel et al., 2012; Yesil, & Sozbilir, 2013; Li et al., 2016). This means that agreeable teachers tend to display higher levels of innovativeness than less agreeable teachers. Arguably, IWB encompasses behaviors that involve social interactions between peers (Messman & Mulder, 2012). Steel et al. (2012) argued that agreeable individuals facilitate smooth social interactions by being kind, helpful and cooperative. Lukacs (2009) also highlighted the importance of teachers' collaborative skills for the realization of change and improvement

initiatives. That being said, it comes with no surprise that the collaborative skills of agreeable teachers seem to enable higher levels of IWB, when compared with less agreeable teachers.

With regards to neuroticism, it was unexpected to find this trait among the best set of predictors of teachers' IWB. The findings are in contrast with previous research, where negative, or no association at all, was found between neuroticism and innovative behavior (Chen et al., 2010; Yesil, & Sozbilir, 2013). However, according to Morossanova (2003) and Tamir (2005), when neurotic individuals face uncertain situations they attempt to influence the outcomes in order to minimize uncertainty. The majority of the participants in this study reported that they have been involved in at least one process of change or renewal in their work recently. Such processes create ambiguous situations (Geijsel, Slegers, van den Berg, & Kelchtermans, 2001) which could have triggered neurotic individuals to engage in innovative behaviors in order to deal with the ambiguity of such processes. Although this is a plausible explanation, it is not conclusive. Being previously involved in improvement initiatives could also mean that the participants of this study were used to changing situations in their daily work. Another possible explanation of these findings is offered by Patterson et al. (2009), who concluded that individuals who reported intermediate levels of Neuroticism, displayed more innovative behaviors in their workplace. Indeed, the teachers in the current research reported intermediate levels of Neuroticism and high levels of IWB, supporting the alternative explanation given above.

The findings regarding the rest of the investigated variables were non-significant, thus not included in the set of best predictors of teachers' IWB. With regards to the personality traits conscientiousness, extraversion and openness to experience, the findings are in contrast with previous studies that found these traits to be of influence regarding innovative behavior (Chen et al., 2010; Li et al., 2016; Rodrigues, 2002; Steel et al., 2012). At an early stage of the conducted analysis, openness to experience and conscientiousness were found to be related

with IWB. However, no evidence of statistical significance was found in terms of their predictive power. De Vries et al. (2016) argued that the features reflected through the personality traits of openness to experience, extraversion, and conscientiousness, are in alignment with the features reflected through proactivity. Proactive individuals are open to changes (alignment with openness to experience), initiate changes (alignment with extraversion), and display such behaviors in order to realize changes (alignment with conscientiousness) (Bateman & Crant, 1993). The potential overlapping between the aforementioned could explain the lack of evidence for predictive power (Pallant, 2013). Nonetheless, openness to experience, extraversion, and conscientiousness are still important factors when studying the relationship between personality and IWB.

Regarding organizational cynicism, the assumption was made that it would be negatively associated with IWB and able to predict it. However, the findings did not offer strong statistical evidence to support this assumption. A possible explanation for these findings could be the culture of international schools and the observed high mobility of teachers. Cartwright, & Holmes (2006) argued that in the context of corporate organizations, organizational cynicism emerges when organizations' demands on employees' skills are not in line with employees' expectations for growth. International schools have a high mobility of teachers and school directors (Benson, 2011; Odland, & Ruzicka, 2009), which makes it less possible to develop such high expectations. Organizational cynicism may still have an effect on teachers' IWB, in schools that resemble the corporate condition described above.

Limitations and Future Research

Even though this study was carefully designed and conducted, some limitations should be considered. The main limitation of this study is the small sample size, which could have interfered with the accuracy of the results. A small sample size does not allow for certain

conclusions, meaning that although some factors were not deemed significant, they might still be important. For example, in the case of organizational cynicism, there was not enough statistical evidence to suggest significance even though the p-value was somewhat small. Moreover, the data indicated that participants with solely a teacher role were less innovative than those who (also) acted as leaders, while innovators and early adopters were relatively younger than early and late majority. However, in both cases the small size of the sample does not allow for certain conclusions, but just indications. Thus, it is suggested to replicate the study including a bigger sample to further investigate the significance of the aforementioned with respect to innovativeness.

Another limitation of this study is the nature of the method used to gather data (i.e., self-rating questionnaire). Even though self-rating is the most commonly used way of gathering data due to its convenience (Budah, 2011), there are some limitations that should be considered due to self-serving bias. For instance, participants' answers may be less honest due to their personality or they may fail to precisely rate themselves, especially when they are asked about their behavior, in an attempt to appear more likeable (Hoskin, 2012). In addition to self-rating, interviews, peer-rating, and/or observations could be used to measure participants' behavior in a more objective manner and overcome this issue.

An additional limitation of the study is the little available information on participants' experiences with prior innovative initiatives in their current workplace. Individuals' prior experiences with such initiative can mediate the relationship between their personality and the innovative behavior they display (Boyce, Wood, & Brown, 2010). Having more information on this matter could lead to a more accurate profiling of the participants and possibly offer more concrete explanations of the results. Thus, it is suggested for future research to include more background information on participants' experience with previous innovative initiatives.

Moreover, this study greatly focused on the individual, whereas incorporating contextual factors would allow for more holistic conclusions and concrete explanations of the findings. This is because research has identified the relationship between personality and innovative behavior as context-bound (Burke & Witt, 2002; Baer & Oldham, 2006). Contextual factors such as job characteristics, social interactions, and culture can mediate this relationship (Moolenaar, Daly, & Sleegers, 2012; Ryan, & Tipu, 2013; Taghipour, & Dezfuli, 2013; Woods, Mustafa, Anderson, & Sayer, 2018). As such, future research on this matter should not neglect to take into account contextual factors as well. The narrow scope of this study poses another limitation regarding the generalization of the findings in contexts other than international schools. Future research including a wider spectrum of professions and contexts is suggested, in order to draw conclusions that can be generalized.

Theoretical and Practical Implications

Notwithstanding these limitations, the findings of this study on teachers' IWB have both theoretical and practical implications. Regarding theoretical implications, this study builds on the existing research surrounding the main elements that were in the central focus. Although there are many studies criticizing Rogers' model (Mahajan et al., 1990; Lundblad, 2003; Lyytinen, & Damsgaard, 2001; Zhu & He, 2002), the findings of the current study offer arguments for its applicability and generalizability in the educational sector. Moreover, the current study included the measurement instrument developed by Messman and Mulder (2012), who used it in the context of vocational schools. The current study adds value in the sense that it expanded the range of contexts this measurement has been used, adding the context of international schools. Furthermore, the relationship between personality and innovativeness is an area that research seems to produce inconsistent results (Abdullah et al., 2016; Chang, & Chang, 2010; Chen et al., 2010; Kwang & Rodrigues, 2002; Li et al., 2016; Steel et al., 2012; Yesil, & Sozibilir, 2013). The findings of this study provide some interesting insights on this

relationship. For example, although previous research argued that neurotic individuals are less likely to engage in innovative behaviors, the findings of the current research suggest that neurotic teachers were more innovative in their work than less neurotic teachers.

On the practical implications of this study, it is important to highlight two main aspects. First, that the use of the tool to measure IWB could be expanded in the schools as a means to evaluate teachers' innovativeness and identify the individuals that are prone to innovate. By doing so, school leaders can strategically delegate actions to their staff, ensuring alignment with teachers' aspirations and increasing the effectiveness of change and improvement efforts. Additionally, by knowing who is less likely to innovate, actions for inclusion of those individuals could be taken for sustainable educational innovations. Second, the insights on the determinants of teachers' IWB could be extremely helpful when attempts for change and innovation are made. Talukder (2012) suggested that in order to provide individuals with the support they need towards implementing innovations, it is essential to understand the influencing factors. For instance, activities and responsibilities could be personalized to align with individuals' personality, or tools could be developed on the same logic, in order to motivate teachers to be actively involved, help them unleash their innovative self or provide the necessary support to successfully implement better solutions. Further research on the possible predictors of IWB is needed of course, to broaden our understanding on the underlying factors that can determine the success or failure of innovative initiatives. Nonetheless, the insights of this study offer guidelines for future research and are a valuable addition to the existing knowledge.

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