Influence of personality on self-efficacy of work and supervision of children's schooling during COVID-19

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ABSTRACT

This study evaluated the influence of personality factors and traits on the sense of self-efficacy in the combination of roles (work and supervision of children's school activities) in the context of COVID-19 in a representative sample of Ecuadorian adults of both sexes (n=400). Personality traits were assessed using Cattell's 16-PF personality test, and self-efficacy was measured using an adaptation of the Self-Efficacy Questionnaire. The results show that the five main personality factors of the 16-PF significantly predict self-efficacy and influence its variability by 12.7%. The factors Anxiety, Independence, and Toughness are the strongest predictors of self-efficacy. It was also found that the 16 personality traits assessed by the 16-PF questionnaire can predict 16.9% of self-efficacy. The most predictive traits were stability, openness to change, dominance, privacy, and liveliness. These results suggest that individual personality differences allow individuals to better adapt to the various demands in a complicated environment such as COVID-19. These findings can be used to understand and support individuals when faced with complex environmental demands.

1. Introduction

Several investigations carried out in past decades have identified that personality factors and traits have a significant predictive effect on the success or failure of people when facing various dimensions of their lives (Chamorro-Premuzic, 2016). The COVID-19 pandemic has brought new adaptation challenges for citizens of all countries in the world in their daily activities (Maison et al., 2021). In countries like Ecuador, where the majority of homes have opted for online education, working parents have had to adapt to new challenges, having to combine their full-time online work (telecommuting) with closer supervision of their children's educational activities at home. Adaptation to these new demands could be positively or negatively affected by the level of factors and personality traits of the individuals who face these challenges. This study carried out in a sample of Ecuadorian fathers and mothers in the years 2021 and 2022, aimed to identify the effect that personality factors and traits have on the sense of self-efficacy in the combination of roles of work responsibility and supervision of children's school activities in the COVID-19 pandemic.

1.1. The effect of personality on different dimensions of life

Based on the definition of personality as a set of relatively stable traits that make up individuality, various investigations have researched the effect that the factors and traits of this psychological construct have on people's sense of efficacy in coping with multiple demands of the different dimensions of life such as work, studies, interpersonal relationships, health, sense of well-being, etc. There is sufficient empirical evidence showing that personality is an important predictor of job performance measured in a general way, as well as in different types of specific work activities (Barrick et al., 2001). Schmidt and Hunter (1998) identified that the self-control personality factor correlated .31 with job performance. Hurtz and Donovan (2000), after conducting a meta-analysis, identified that neuroticism presents a correlation of -.13 with this same type of performance.

Regarding job performance in specific activities, there have been several studies that have found that personality significantly affects performance in professions in which there is high interpersonal interaction (Mount et al., 1998). Extroverted and

service-oriented people will often be sought for customer service, personality traits not required for other jobs, such as machine maintenance technician. Regarding this same aspect, Carlo et al. (2005) found that high levels of extraversion and agreeableness were predictors of success in engaging in prosocial work behaviors, while low levels of self-control and high levels of neuroticism predicted the presence of antisocial behaviors. Additionally, meta-analytic studies report significant associations between personality factors and entrepreneurship (Brandstätter, 2011). Some research indicates that entrepreneurial people tend to be creative, open to change, motivated, competitive, focused, etc., which is why they tend to obtain high scores in the extroversion, openness, and conscientious factors; and low scores in neuroticism and agreeableness (Wang et al., 2016).

Various studies have evaluated the role that personality traits play in predicting academic performance and have identified that one of the factors that best predicts this variable is conscientiousness, while extraversion is negatively associated with academic achievement (Hayat et al., 2020). On the other hand, Hayat et al. (2020) found significant direct relationships between academic performance and the personality factors openness (β=.16, p<,001), conscientiousness (β=,22, p<,001), and affability (β=.19, p<.001).

Several studies have analyzed the influence of personality factors on health. For example, some research indicates that the personality factors that best predict mental health, quality of life, and positive affect are neuroticism, extraversion, and conscientiousness (Finch et al., 2012). Smith and Spiro (2002) found that intrinsic characteristics of personality traits can be associated with psychological processes that have negative physical results. For example, low agreeableness can lead to increased activation of the sympathetic nervous system and, in turn, increase the chances of coronary artery disease. Other studies have associated personality traits with various aspects of health in everyday life, such as stress. In particular, it has been identified that people who score high in the neuroticism factor perceive greater stress, while those with high scores in the extraversion, conscientiousness, affability, and openness factors report lower perceptions of stress (Frost et al., 2011).

There have also been investigations that have tried to measure the influence of personality factors on problems raised in the social environment. For example, Quirk et al. (2003) reported significant correlations between the Big Five factors and several indicators of psychopathology measured by the Minnesota Personality Inventory (MMPI). For example, these authors found that neuroticism measured with this test had a correlation of .61 with family problems, while on the opposite side, the factors extraversion, agreeableness, and self-control had negative correlations with this problem (-.30, -.43, and -.41 respectively). Finally, there have also

been studies on the influence of the five big personality factors in a more general and abstract dimension of life, such as the perception of quality of life and happiness. Furnham and Cheng (2000) found evidence that extraversion and emotional stability predispose individuals towards happiness through their role in positive human disposition. Pocnet et al. (2017) found significant effects of personality factors on the perception of quality of life. The factors extraversion (β=.26, p<.001) and conscientiousness (β=.35, p<.001) correlated positively with this variable, while neuroticism (β=-.35, p<.001) did negatively. The previously mentioned studies would lead us to think that personality factors and traits could predict people's adaptation to the great challenges the COVID-19 pandemic has brought to homes. The objective of this study was to measure this effect in a representative sample of Ecuadorian workers.

1.2. Self-efficacy and some elements that affect this variable

Bandura (1993) defined self-efficacy as a personal belief in being capable of successfully achieving a desired result. General self-efficacy relates to how individuals judge their ability to tackle challenging tasks in different situations (Frost et al., 2011). In parenting, self-efficacy is defined as parents' perception of their competence in that role (Coleman and Karraker, 2003). In this sense, Elder (1995) mentioned that parents with a high sense of self-efficacy work hard to ensure positive experiences for their children, even in stressful situations.

Some studies have found that self-efficacy is positively associated with self-esteem, optimism, self-regulation, and life satisfaction, among others (Frost et al., 2011). Bingöl et al. (2019) found that psychological resilience and positivity explain 33% of the self-efficacy variance. Bandura (1997) suggested that the perception of self-efficacy can vary depending on various elements, such as the evaluation of existing abilities, the perceived difficulty of the action, the effort required, the need for external support, past achievements, and the ways of organization of experiences.

Abuhammad (2020) in a study on the sense of self-efficacy in women mothers of children during their first years of life, found that some of the factors that predict this variable are: Quality of marital relationships (β=.251, p<.001), family income (β=.139, p=.050), employment (β=-.187, p=.027) and education (β=.214, p=.004). Debes (2021) analyzed the predictive power of emotional intelligence on self-efficacy in a sample of school principals. In his study, he found significant associations between the total scores of both variables (r2=.261, p<.001).

1.3. Influence of personality on self-efficacy

Several studies have found that some personality traits have significant relationships with self-

efficacy. For example, Frost et al. (2011) found significant relationships between the Big Five personality factors and general self-efficacy. The correlations were negative with the factors neuroticism (β=-.51, p<.0001) and affability (β=-.11, p<.0001); and positive with the factors extroversion (β=.51, p<.0001), openness to experience (β=.27, p<.0001), and conscientiousness (β=.48, p<.0001). In a similar study, Pocnet et al. (2017) found that the personality factors extraversion (β=.30, p<.001) and conscientiousness (β=.32, p<.001) are positively associated with the sense of self-efficacy. Judge et al. (2002), in a meta-analytic review, found both positive and negative correlations between the Big Five personality factors and general self-efficacy. The most significant positive associations were established with the conscientiousness and extraversion factors, while the most important negative relationship was found with the neuroticism factor.

Other specific studies have found significant predictive effects of personality factors on self-efficacy. Nauta (2004) found that the personality factors agreeableness and extraversion significantly predict people's levels of self-efficacy. Furthermore, Wang et al. (2016) found that with the exception of neuroticism, the other four big personality factors positively predict self-efficacy. Hoyle and Gallagher (2015) identified that a person is more likely to have a high level of self-efficacy when they have high levels of extraversion and conscientiousness and low levels of neuroticism. The aforementioned studies suggest that personality factors and traits could be significant predictors of variables related to people's adaptation to complex challenges. The COVID-19 pandemic posed many difficulties to individuals in different dimensions of life. Currently, it is uncertain if individual personality differences could affect the adaptation of individuals to these challenges. The main goal of this study was to evaluate the effect of personality factors and traits (Cattell and Mead, 2008) on the sense of self-efficacy in the combination of work roles and supervision of children's school activities in a representative sample of Ecuadorian mothers and fathers.

2. Methods

2.1. Participants

A non-probabilistic convenience sampling was implemented to recruit participants. Participation invitations were sent through different platforms and social networks, including Facebook, Instagram, Twitter, and WhatsApp. Participation was voluntary and self-selected. A total sample of 400 Ecuadorian adults (18 and older) was obtained. The sample included 187 men (46.75%) and 213 women (53.25%) between 18 and 65. They were in uninterrupted job commitment with institutions for over a year and were in the teleworking modality in their households during the study. An additional criterion in the selection of the sample was that the

participants had one or more children of school age and were supervised in their school activities by the participants.

2.2. Variables and instruments

The independent variables in this study were the personality factors and traits measured with the 16-PF test developed by Cattell and Mead (2008), adapted and validated to the Ecuadorian population. Studies on the reliability of this test have shown that its internal consistency is acceptable, with a Cronbach's Alpha of 0.76. On the other hand, the dependent variable of this study, the sense of self-efficacy, was measured with an adaptation of the self-efficacy questionnaire developed by Baessler and Schwarzer (1996). The original items of this test that evaluate a general sense of self-efficacy were adapted to the scenario of the combination of work roles and supervision of school activities of the children at home during the COVID-19 pandemic.

2.3. Procedure

The participants were contacted between April 2021 and May 2022 through their contact information provided by different institutions in Ecuador that implemented the teleworking work modality due to the COVID-19 pandemic. Once the participants were contacted by telephone or email, the research objectives and the specific requirements for their participation were explained to them. Subsequently, their informed consent was obtained virtually before applying the instruments. All the participants completed the 16PF test and the adapted self-efficacy questionnaire electronically.

2.4. Analysis of data

Once the planned sample of participants was obtained, the results were tabulated in the statistical program SPSS-28 (IBM, 2021), and the data was stored in a safe dataset. The statistical analyses were carried out after the tabulation and purification of the data. To identify the effects of personality factors and traits on the sense of self-efficacy, different multiple linear regression analyses were performed (introductory and by steps). Initially, introductory multiple linear regression analyses were performed to identify the magnitude of the effect of the Big Five personality factors on the sense of self-efficacy. A multiple linear regression analysis was also performed to determine the effect that the 16 personality traits have together on our variable of interest. Finally, stepwise multiple linear regression analyses were performed to identify the factors and traits that best predict the dependent variable.

3. Results

The first multiple linear regression analysis that placed the Big Five personality factors as predictors

of self-efficacy resulted in an adjusted r2 of .127 (F=12.567, p<.001). This means that the five personality factors can predict 12.7% of the dependent variable self-efficacy. This result was statistically significant with p<.001. In this initial analysis, the only Beta coefficients that were significant for the five factors were anxiety (β=-.249, p<.001) and independence (β=.249, p<.001). The multiple linear regression analysis that placed the 16 specific personality traits as predictors of self-efficacy resulted in an adjusted r2 of .169 (F=6.086, p<.001). This means that the 16 personality traits can predict 16.9% of the dependent variable self-efficacy. In this analysis, the traits that had statistically significant Beta coefficients were: stability (β=.251, p<.001), dominance (β=.136, p<.001), privacy (β=.14, p<, 001), and openness to change (β=.159, p<.001).

The stepwise multiple linear regression analysis to identify the factors that together have the greatest predictive effect on self-efficacy yielded that the best prediction model is formed based on three factors: anxiety (β=-.208), independence (β=,209), and hardness (β=-,090). These three factors together yielded an adjusted r2 of .123 (F=19.588, p<.001.). From this result, it can be inferred that these three factors can predict 12.3% of self-efficacy. This is a similar proportion compared to the model in which the five personality factors are placed as predictors (a difference of only 0.4%). The stepwise multiple linear regression analysis to identify the traits that together have the most significant predictive effect on self-efficacy yielded that the best prediction model is formed based on the five traits: stability (β=,285), openness to change (β=,130), dominance (β=,098), privacy (β=,150) and liveliness (β=,091). These five traits together yielded an adjusted r2 of .162 (F=16.443, p<.001). This means that these five traits predict 16.2% of self-efficacy. This is a very similar proportion to that of the model, including all 16 personality traits as predictors (a difference of just 0.7%).

4. Discussion

This research project aimed to identify the personality factors and traits that have the most influence on self-efficacy in the combination of parents' roles of work responsibility and supervision of children's school activities in the context of the COVID-19 pandemic in an Ecuadorian sample. The main factors that are the strongest predictors of this construct were anxiety, independence, and toughness, which together can predict 12.3% of self-efficacy. The association between self-efficacy and the anxiety factor was negative, as expected. High anxiety levels are associated with lower self-efficacy. This finding goes hand in hand with what has been found in various studies that establish that people who experience negative emotional states, such as anxiety, stress, depression, fear, hostility, etc., tend to evaluate the situations they face as highly threatening and underestimate their coping

resources; which strengthens negative beliefs about their ability to manage circumstances and achieve beneficial results (Frost et al., 2011; Pocnet et al., 2017; Wang et al., 2016). Similarly, self-efficacy and toughness were negatively correlated. High scores on this personality factor indicate low sensitivity, inflexibility, and high resistance to change. In contrast, high levels of self-efficacy are associated with the ability to respond flexibly and satisfactorily to the various challenges of daily life. Therefore, this finding supports the notion that individuals with high scores in the hardness factor perceive themselves as low in self-efficacy (Frost et al., 2011).

In line with previous research, the present study also identified positive associations between the independence factor and the self-efficacy variable (Frost et al., 2011). People with high levels of independence are characterized by being open to experience, autonomous, creative, and innovative (Wang et al., 2016). These traits favor achieving the desired results in different stressful situations, which indicates a greater sense of self-efficacy.

Regarding the specific personality traits that mainly affect self-efficacy, it was found that stability, openness to change, dominance, privacy, and liveliness are the best predictors of this variable, with a joint prediction of 16.2%. The associations between self-efficacy and these traits were positive, which confirms the findings of Pocnet et al. (2017), who found that emotionally stable people estimate their agency and their coping capacity, so they tend to feel an adequate level of satisfaction regarding the results they obtain after facing various circumstances. In agreement with other studies, it was identified that flexible, creative, and open to change individuals adapt better to stressful situations, perceive events as challenges instead of threats, and value their coping resources positively, reasons for which they are warned more self-efficacy (Frost et al., 2011). Finally, in agreement with what was identified by Wang et al. (2016), the present study found that people with a high sense of self-efficacy are confident, competent, active, and self-sufficient.

This study has some specific practical implications. This study found that the general personality factors anxiety, independence, and toughness and the specific personality traits stability, openness to change, dominance, privacy, and liveliness are the best predictors of self-efficacy for parents in the combination of roles of work and academic supervision of their children. The main practical implication is to explain in a better way the individual differences in the adaptation process to multiple responsibilities that parents have during a very complex environment such as a pandemic. Identifying these factors and traits will provide useful information on individual strengths and development opportunities to respond better to the unexpected demands of a very complex environment. For instance, this information could be useful to create more self-awareness of specific individual characteristics that could have a

significant effect on parents' performance in the combination of roles. This identification could be used to design developmental plans to better adapt to these challenges, considering that most individuals were unprepared to face them during the recent pandemic.

The findings of this study also provide directions for new research. It assessed the influence of personality traits on a relatively new construct, such as the perception of self-efficacy in parents when facing the combination of roles of responsibility at work and supervision of their children's school activities. The main outcome was identifying the personality factors and traits that significantly predicted the assessed construct. The demands that the combination of roles entails during a situation as complex as a pandemic are very difficult, so there would be other individual characteristics that could also be significant predictors of success or failure in the combination of roles, for example, cognitive intelligence, skills, skills, attitudes, motivation, etc. Therefore, future studies should be performed to assess the influence of those other variables and their possible interactions. Regarding the limitations of this study, given that this research has been carried out with a convenience sample of Ecuadorian adults, the generalizability of its results is limited. For future research, it would be important to consider larger samples composed of different strata to provide a better representation of the population. Additionally, the self-efficacy construct in the combination of responsibility roles at work and supervision of children's school activities is new. Therefore, additional validation studies of the instruments designed to measure it are required.

5. Conclusions

The results of this study show that the five main personality factors assessed by applying the Sixteen Personality Factor Questionnaire (16-PF) significantly predict parents' self-efficacy by 12.7%. The strongest predictors among the five factors are anxiety, independence, and toughness. The sixteen personality traits can predict 16.9% of self-efficacy. The strongest predictors among those personality traits are stability, openness to change, dominance, privacy, and liveliness. These results support the notion that there are individual personality differences that help individuals to better adapt to complex challenges such as a pandemic. These findings can be used to help individuals gain a better understanding of the qualities that help them to better adapt to these challenges.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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