Mediating Role of Self-Efficacy and Dimensions of Emotional Openness in Links Between Personality and Quality of Life: Zoom on Openness and Agreeableness

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There is an abundant literature on the links between quality of life and neuroticism, extraversion, and conscientiousness. Several studies have even explored how these links are mediated by variables such as self-efficacy and openness to emotion. However, less attention has been paid to the influence of the openness and agreeableness, as results have pointed to moderate to weak predictive values. The aim of the present study was to shed light on the roles of all five personality factors, especially openness and agreeableness, exploring both their direct effects on quality of life and their indirect effects, mediated by self-efficacy and emotional openness. The effects of neuroticism, extraversion, and conscientiousness on quality of life were consistent with previous findings in the literature. Openness had only indirect effects on quality of life: positive when mediated by self-efficacy, and negative when mediated by emotional openness. Agreeableness had a positive direct effect, but a negative indirect effect via self-efficacy. These results, together with possible applications and future avenues for research, are discussed.

Keywords: quality of life, personality, openness, agreeableness, mediation, self-efficacy, emotional openness

INTRODUCTION

The World Health Organization defines *quality of life* as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the

person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment. (Skevington et al., 2004, p. 3).

Seldom mentioned in the literature, *openness to experience* and *agreeableness*, two of the Big Five personality traits, have been found to have only moderate to weak effects on quality of life. Although the link between openness and quality of life is not particularly strong, Fredrickson (1998, 2001)'s broaden-and-build theory of positive emotions suggests that creativity and openness to aversive stimulus response repertoires can reduce negative emotional experience and above all foster positive affect. In a similar vein, Wang and Li (2015) found that curiosity is positively linked to subjective wellbeing[1], suggesting that the former can increase the latter (Jovanovic & Brdarić, 2012; Kashdan & Steger, 2007).

There are four possible explanations for the way in which openness contributes to quality of life. First, the pleasure afforded by reflective thinking and intellectual engagement can constitute a positive factor for wellbeing, in terms of work satisfaction and the exchange of stimulating ideas with others. Second, having an interest in reflective thinking can promote metacognition and meta-emotions, which make it easier to adapt to aversive situations and inform effective self-regulation processes. For Digman (1997) and DeYoung (2011), openness corresponds to plasticity and flexibility, both of which help individuals to see ambiguous situations as opportunities rather than threats (Bardi et al., 2009). It therefore fosters positive emotional experiences. Third, openness allows individuals to benefit fully from entertainment and leisure activities. These supply them with emotional and stimulating experiences, as well as with positive topics of conversation (Ainley et al., 2002). Fourth, openness may be associated with decentering, which can be useful for escaping vicious circles of negative thoughts and rumination (Pavani et al., 2017). There is nevertheless only a moderate link between openness and quality of life, and the literature contains two possible explanations for this. First, openness has highly heterogeneous components (McCrae & Costa, 1991a) that may result in differential associations and a weaker overall link, as these components do not necessarily all pull in the same direction (positive vs. negative effects). Second, the relation between openness and quality of life may be entirely indirect, mediated by emotion regulation processes such as openness to emotion, which we investigated in the present study.

Like openness to experience, agreeableness is largely unrelated to external criteria. Although it does not seem to influence the cognitive processes elicited by individual tasks, it is certainly relevant for group or team tasks. The term *agreeableness* refers to the quality of interpersonal relations, on a continuum ranging from compassion to antagonism (Rolland, 2002). Its positive endpoint corresponds to warmth, benevolence, and sympathy in interpersonal contacts (McCrae & John, 1992). Some studies have shown that agreeableness is linked to positive behaviors relating to social cohesion and performance (Barrick et al., 1998; Stewart et al., 2005), as well as to the quality of interpersonal links (Costa & McCrae, 1992). Nettle (2006) concluded that agreeableness promotes interpersonal interactions and group dynamics. According to Pulakos et al. (2000), it favors cooperation, assistance, and support, thereby enhancing the level of wellbeing. We therefore hypothesized that agreeableness can at the very least have beneficial effects on the social relationships domain of quality of life. Concerning the links between agreeableness and other quality of life domains, McCrae and Costa (1991b) observed that agreeableness was positively but weakly correlated with quality of life. Like openness, agreeableness may have highly heterogeneous components with differential associations with quality of life domains, resulting in a weaker overall link. Again like openness, it may be indirectly linked to quality of life, which would explain the weakness of the link.

The direct relations between quality of life and the neuroticism, extraversion and conscientiousness personality traits have been extensively documented in the literature (Anglim et al., 2020; Costa & McCrae, 1992; Hoyle, 2006; McCrae & Löckenhoff, 2010; Roberts et al., 2005; Schaefer et al., 2004; Wismeijer & van Assen, 2008). Moreover, some authors have identified self-efficacy and emotion regulation as mediating factors (Pocnet et al., 2017), suggesting that they channel and modulate the effects of personality on quality of life. Individuals with a high level of neuroticism tend to underestimate their personal skills and resources (Hoyle & Gallagher, 2015; Matthews & Zeidner, 2004; Pocnet et al., 2016), thus exacerbating the negative impact of this trait on quality of life. By the same token, quality of life seems to be positively influenced by extraversion via self-efficacy and the use of appropriate emotion regulation strategies. Self-efficacy also influences the relation between conscientiousness and quality of life. More specifically,

confidence in one's ability to accomplish particular task and achieve particular objectives is one of the mechanisms linking conscientiousness to quality of life (Judge et al., 2007). The aim of the present study was therefore to analyze the effect on quality of life of each of the Big Five personality traits, especially openness to experience and agreeableness, and to explore the mediating effects of emotional openness and self-efficacy on the links between personality traits and quality of life.

METHOD

Participants

Participants were 409 adults (211 women; 51.6%) aged 20-65 years (M_{age} = 39.72, *SD* = 12.87). Of these, 254 (62.1%) were recruited in French-speaking cantons of Switzerland, and 155 (37.9%) in and around the city of Aix-en-Provence in France. Most (80%) had completed at least 2 years of higher education, and fewer than 9% were students or unemployed, the rest being economically active.

Procedure

We used convenience sampling to create our sample, applying two inclusion criteria: fluent or native French speaker, and aged at least 18 years. There were two exclusion criteria: retired, and in hospital. As there were no differences between the French and Swiss samples in terms of demographic data and key variables, we pooled their data for the purposes of analysis. Participants were recruited by psychology students as part of their research work. All participants gave their written informed consent prior to filling in an examination booklet containing four pencil-and-paper questionnaires.

Measures

We used an abridged, French-language version (Rolland, 2019) of NEO Five-Factor Inventory (Costa & McCrae, 1992) to measure the Big Five personality traits. Internal consistency coefficients for the five subscales vary from 0.70 to 0.82 (*Mdn* = 0.76; Aluja et al., 2005). Each of the 60 items is rated on a 5-point Likert scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*).

We administered a French-language version (Dumont et al., 2000) of the General Self-Efficacy Scale (Jerusalem & Schwarzer, 1992). This 10-item questionnaire has high internal consistency coefficients varying from 0.75 to 0.91, depending on the language version (Scholz et al., 2002). Items are rated on a 4-point Likert scale ranging from 1 (*Not at all true*) to 4 (*Exactly true*).

We used the 20-item short version of the Dimensions of Openness to Emotion (DOE-20; Reicherts, 2007) to measure emotional openness. This instrument probes five dimensions: cognitive representation of emotions, communication of emotions, perception of internal or external bodily indicators of emotions, and regulation of emotions. The internal consistency coefficients for the five subscales vary from 0.67 to 0.83 (Reicherts, 2007). Items are rated on a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*Extremely*).

To assess quality of life, we administered a 12-item version of the tool designed by the World Health Organization, WHOQOL-12; which was recently validated in French (Dupuis et al., 2020). This tool measures four domains: physical health, psychological health, social relationships, and environment. Dupuis et al. (2020) found that the WHOQOL-12 has good psychometric properties. Each domain is probed by three items, which are rated on a 5-point Likert scale ranging from 1 (*Very poor / Very dissatisfied*) to 5 (*Very good / Very satisfied*).

Statistical Analyses

We ran structural equation modeling analyses using the lavaan package (Rosseel, 2012). We began by testing simple mediations using jamovi software (The jamovi project, 2018), and then included the significant effects in a more complex model. To determine the fit of the models we tested, we calculated several fit indices: χ^2/df ratio, comparative fit index (CFI), goodness-of-fit index (GFI), Tucker-Lewis index (TLI), standardized root mean squared residual (SRMR), and root mean square error of approximation (RMSEA) with its confidence interval (CI). For the χ^2/df ratio, values equal to or below 2 or 3 are deemed satisfactory (Kline, 1998; Ullman, 2001). For the CFI, values above 0.95 represent a good fit, and values

above 0.90 an adequate one. GFI values have to be equal to or above 0.90 (Byrne, 1994), while SRMR values have to be equal to or below 0.08 (Browne & Cudeck, 1993). RMSEA values below 0.06 represent a good fit, and those equal to or below 0.10 an adequate one (Hu & Bentler, 1999).

RESULTS

The effects of neuroticism and the model fit indices are summarized in the first column of Table 1. Neuroticism had a negative indirect effect on each of the four quality of life domains, as well as positive indirect effects via perception of internal indicators on psychological health and social relationships, and negative indirect effects via self-efficacy on physical health, psychological health, and environment.

The model fit for the effects of extraversion on quality of life was satisfactory. These effects and the model fit indices are summarized in the second column of Table Extraversion had a positive effect on each of the four quality of life domains. It also had a positive indirect effect via cognitive representation of emotions on psychological health and social relationships.

The fit of the model concerning the effects of conscientiousness on quality of life was satisfactory. These effects and the model fit indices are summarized in the third column of Table 1. Conscientiousness had a positive direct effect on all four quality of life domains, and several indirect effects. The latter were mediated by cognitive representation of emotions and self-efficacy.

TABLE 1
COEFFICIENTS OF DIRECT AND INDIRECT EFFECTS OF NEUROTICISM, EXTRAVERSION, AND CONSCIENTIOUSNESS ON FOUR QUALITY OF LIFE DOMAINS

	Neuroticism	**Extraversion**	**Conscientiousness**
	Direct effects		
Physical health	-0.40***	0.37***	0.35***
Psychological health	-0.57***	016*	0.27**
Social relationships	-0.51***	0.58***	0.01
Environment	-0.25***	0.20*	0.37***
	Indirect effects		
Physical health	Self-efficacy (-0.11**)		Self-efficacy (0.12**)
Psychological health	PERINT (0.09*). Self-efficacy (-0.13**)	REPCOG (0.04*)	Self-efficacy (0.14***)
Social relationships	PERINT (0.11*)	REPCOG (0.06*)	REPCOG (0.10**). Self-efficacy (0.08*)
Environment	Self-efficacy (-0.08*)		Self-efficacy (0.07*)

Note. REPCOG: cognitive representation of emotions; PERINT: perception of internal bodily indicators of emotion.

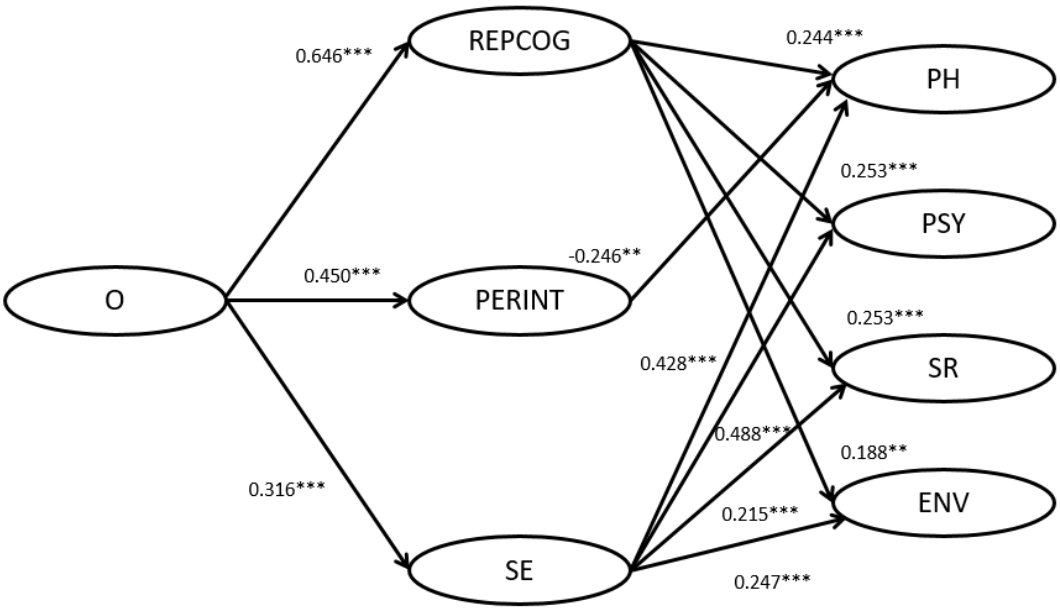
TABLE 2
FIT INDICES FOR STRUCTURAL EQUATION MODELS OF NEUROTICISM, EXTRAVERSION, AND CONSCIENTIOUSNESS

Indices	Neuroticism	Extraversion	Conscientiousness
χ^2/ddf	3.14	2.72	2.69
p	< 0.001	< 0.001	< 0.001
CFI	0.92	0.93	0.95
GFI	0.94	0.96	0.96
TLI	0.91	0.92	0.95
SRMR	0.08	0.08	0.07
RMSEA	0.07	0.06	0.06
90% CI	[0.07, 0.07]	[0.06, 0.07]	[0.06, 0.07]

Note. CFI: comparative fit index; GFI: goodness-of-fit index; TLI: Tucker-Lewis index; SRMR: standardized root mean squared residual; RMSEA: root mean square error of approximation; CI: confidence interval.

The model including the effects of openness to experience on quality of life (Fig. 1) had a satisfactory fit (χ^2/ddf = 2.55; p = 0.000; CFI = 0.937; GFI = 0.967; TLI = 0.933; SRMR = 0.072; RMSEA = 0.061, 90% CI [0.058, 0.064]).

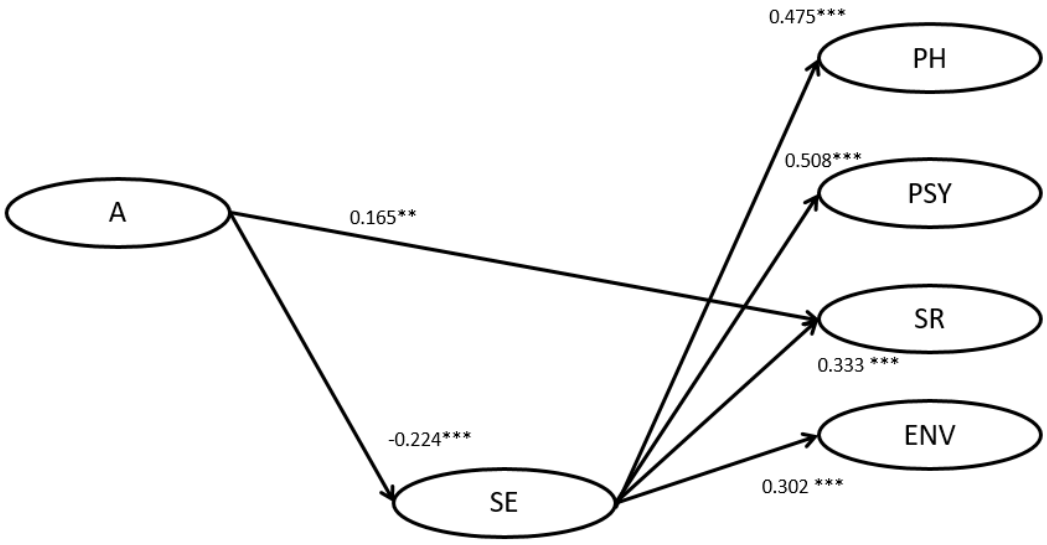
FIGURE 1
STRUCTURAL EQUATION MODEL: INDIRECT EFFECTS OF THE OPENNESS TO EXPERIENCE PERSONALITY TRAIT ON QUALITY OF LIFE DOMAINS VIA EMOTIONAL OPENNESS AND SELF-EFFICACY



Note. O: openness; REPCOG: cognitive representation of emotions; PERINT: perception of internal bodily indicators of emotion; SE: self-efficacy; PH: physical health; PSY = psychological health; SR: social relationships; ENV: environment.

Openness did not have a direct effect on quality of life. It did, however, have positive indirect effects on all four quality of life domains, via both cognitive representations of emotions and self-efficacy. It also had a negative indirect effect on physical health via perception of internal bodily indicators of emotions.

FIGURE 2
STRUCTURAL EQUATION MODEL: DIRECT AND INDIRECT (VIA SELF-EFFICACY) EFFECTS OF THE AGREEABLENESS PERSONALITY TRAIT ON QUALITY OF LIFE DOMAINS



Note. A: agreeableness; SE: self-efficacy; PH: physical health; PSY: psychological health; SR: social relationships; ENV: environment.

The model including the effects of agreeableness on quality of life (Fig. 2) had a satisfactory fit (χ^2/ddf = 2.61; p = 0.000; CFI = 0.961; GFI = 0.984; TLI = 0.958; SRMR = 0.071; RMSEA = 0.062, 90% CI [0.058, 0.066]). Agreeableness had a positive direct effect on social relationships, but negative indirect effects via self-efficacy on all four quality of life domains.

DISCUSSION

The twofold aim of the present study was to analyze the effects on quality of life of each of the Big Five personality traits, especially openness to experience and agreeableness, and to explore the mediating effects of emotional openness dimensions and self-efficacy on the links between personality traits and quality of life. In line with previous research, we failed to find any direct effect of openness on quality of life domains (e.g., Hoyle, 2006; McCrae & Löckenhoff, 2010; Roberts et al., 2005). Openness enhanced all four domains via self-efficacy and cognitive representation of emotions, but had a negative indirect effect on physical health via perception of internal bodily indicators of emotion. Openness may therefore contribute to quality of life, particularly among individuals who are moderately aware of their bodily sensations or who are able to make sense of their emotional experiences. According to Fredrickson (1998, 2001)'s theory, openness is associated with entertainment and enjoyment, but it has also been linked to substance (alcohol, drugs, etc.) dependence, which damages people's health (Plaisant et al., 2005). Costa & McCrae (1984) also already mentioned that openness is a double-edged sword concerning quality of life: open individuals experience both the good and the bad in a more intensive way. In this line of logic, our results highlight the Janus-like nature of openness.

Agreeableness also had contradictory effects. We observed a positive direct effect on social relationships, in line with the findings of Costa and McCrae (1992), Nettle (2006) and Pulakos et al. (2000), who found that this personality trait promotes good interpersonal relations. By contrast, we observed negative indirect effects of agreeableness on all four quality of life domains, mediated by self-efficacy. The coexistence of the positive direct effect and the negative indirect effects could help to explain the weak correlation between quality of life and agreeableness already reported by McCrae and Costa (1991b). These

results show that agreeableness and quality of life do not have a univocal relationship. As we have seen, agreeableness can increase individuals' satisfaction with their social relationships. However, as this means paying particular attention to other people's needs and interests, individuals may feel they have fewer opportunities to accomplish their own objectives. In the long run, this may become a frustrating and uncomfortable feeling, making them dissatisfied with their quality of life.

Neuroticism had a negative direct effect on each of the four quality of life domains. It also had negative indirect effects on physical health, psychological health, and environment. However, results indicated that for participants who were better at interpreting their inner sensations, neuroticism has a positive effect on their quality of life, specifically their psychological health and social relationships. Extraversion had positive direct effects on all four quality of life domains, and positive indirect effects on two of them. If participants were extraverted and had a good cognitive representation of their emotions, they experienced a better quality of life, especially the psychological health and social relationships domains. Conscientiousness had positive direct effects on all four quality of life domains, as well as positive indirect effects. A high level of conscientiousness combined with a good cognitive representation of one's emotions was particularly beneficial for social relationships. High levels of both conscientiousness and self-efficacy enhanced all four quality of life domains.

In summary, neuroticism, extraversion, and conscientiousness had both direct and indirect effects, consistent with the literature (see, for example, Zhang & Tsingan, 2014). These authors also found that agreeableness can suppress affective wellbeing. Our results pointed in the same direction, by showing that agreeableness and openness can have both positive and negative effects on quality of life, when they are mediated by other variables. The present study had several limitations, but also opens up several new research avenues. We tested a separate model for each Big Five personality trait. However, a model including all five personality traits and their mediating variables would be much more comprehensive. This would, of course, require a larger sample. It would also be worthwhile seeking to replicate our results in other cultures, and to analyze the influence of other variables (e.g., income, health status, context) and other mediating processes. A further avenue to explore would be nonlinear relations. Yakimova et al. (2023) tested the nonlinear relations between openness to experience, emotional openness, and quality of life. Although their results were not significant, there might well be nonlinear relations between the other personality traits and self-efficacy, emotional openness, and quality of life. Our research had a cross-sectional design, but a longitudinal study of the dynamic relations between these concepts could confirm and even complement the present findings. Pocnet et al. (2020) reminded us in their literature review that emotion regulation exercises can have an impact on subjective wellbeing, and thus on quality of life. Moreover, this literature review questions and reflects upon the emergence of certain personality traits in the course of psychotherapy can lead patients to modify their perceived quality of life (Pocnet et al., 2020). In the same vein, and from the same therapeutic perspective, individuals with excessive levels of agreeableness could benefit from exercises designed to increase their self-efficacy, in order to improve their experience of quality of life. Furthermore, our results show that self-efficacy plays a central role in the links between personality traits and quality of life, in that it mediates several indirect effects. Interventions intended to promote patients' self-efficacy could therefore lead to greater satisfaction with their quality of life.

ENDNOTE

1. An affective component of quality of life (see Skevington & Böhnke, 2018), or one measure of the quality of life of an individual and of societies (Diener et al., 2003).

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