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ORIGINAL RESEARCH PAPER /ARTICLE ORIGINAL

FATALISTIC BELIEFS AND BOOMERANG EFFECT OF MESSAGES ON BARRIER MEASURES TO SARS IN ADULTS: THE MEDIATING EFFECT OF EMOTIONAL INTELLIGENCE

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ABSTRACT

The current health situation is deteriorating a little more every day. The messages on the barrier gestures supposed to limit the spread of the coronavirus seem rather to produce a boomerang effect. This study had a dual purpose. She examined the mediating effect of emotional intelligence on the relationship between fatalistic beliefs and psychological reactance towards messages on barrier gestures to SARS/COVID-19, and studied the effect of age on emotional intelligence. The data were collected from 227 participants (May to June 2020), aged between 15 and 61; from a composite questionnaire containing the TEIQue-SF, the HPRS and the Fatalism Scale. A mediation test according to the "bootstrap" 5000 method was carried out. The results show, on the one hand, that adults are more emotionally intelligent than young people; on the other hand, that emotional intelligence mediates the relationship between fatalistic beliefs and psychological reactance vis-à-vis the messages on barrier gestures with the general population and the adult population. The theoretical and practical implications of these results were discussed.

Keys words : COVID-19; barrier measures; psychological reactance; emotional intelligence; fatalistic beliefs.

[I] INTRODUCTION

Severe Acute Respiratory Syndrome (SARS), recently identified in the city of Wuhan in China in early December 2019 as Coronavirus disease 2019 (COVID-19) is now classified as a pandemic disease. Today, COVI-19 is present in all continents of the world. As of February 2, 2021, 102.1 million infectious cases and 2.2

million deaths were already counted (www.who.int/). Situation report-89 has shown that there was a variation distribution per age as the pandemic progressed (WHO, 2020a). In fact, people at the aged 30 years old and over are three times at risk of being severely infected than those under 30 years old. In addition, from the age of 30 years, the death rate reaches and exceeds 1% (Health and Human Services Agency, 2020; Mouton, 2020). Furthermore, the average age of asymptomatic people is around 30 years old: 31 years (Heneghan et al., 2020) and 32. 5 years (Gao et al., 2020). However, asymptomatic people represent a risk for the community, because their stage makes it difficult to prevent and control the spread of this disease (Gao et al., 2020). As a result, this study divides people into two categories: those under 30 whom we call young people and those 30 and over whom we call adults. So far, it is becoming very difficult for the scientific community to set up an effective protocol for monitoring and dealing with this pandemic. Therefore, COVID-19 has emerged as the major health and social concern now. The major reasons of the rapid spread of this disease are the inappropriate behaviours adopted by individuals (WHO, 2020; www.who.int/). Now that the world is facing a second wave of contamination and the growth of the virus tends to show a mutation, it seems that its eradication would largely depends on non-pharmaceutical interventions, which would be, political decisions and individual behaviours (Ferguson et al., 2020). However, previous experience with similar pandemics have shown that non-pharmaceutical action that involves free choice, leads to more conflict when it involves political force (The Hastings Center, 2020). To this extent, individual behaviours such as regularly hands washing, avoiding social contact, self-confinement, etc. remain the most acceptable ways to reduce the spread of this new coronavirus. Organizations and governments have hired media campaigns to work on raising awareness about appropriate behaviours. Unfortunately, as a result, individuals are reluctant and even opposed to obeying such behaviours seeing the drastic increase of the number of infected and dead by day report (www.who.int/). This health communication therefore results in a boomerang effect (Reynolds-Tylus, 2019). It is the adoption of a behaviour opposite to that prescribed by a persuasive message, perceived by target as too directive and inducing a feeling of threat or loss of freedom. This feeling stimulates an attempt to restore autonomy by adopting a position contrary to that recommended by the advertising campaign (Miller et al., 2020). Other authors rather label it rebound effect (Dumont & Yzerbyt, 2001). This designates a return to consciousness in a more intense way, thoughts that one initially tried to suppress. In both effects we observe a paradox: the presence of unwanted behaviour or thought. To account for this paradox, the theory of psychological reactance is commonly utilized.

[II] MATERIALS AND METHODS

1.Concepts

- **Psychological reactance** : Psychological reactance is an aversive motivational state that arises when an individual's freedom is eliminated or threatened (Brehm & Brehm, 1981). This motivational force allows the individual to recover his freedom, even if this is not followed by a beneficial effect for his health. The theory of psychological reactance defines freedom as the belief of an individual in his ability to initiate a behaviour, to decide when and how to adopt that behaviour (Niesta Kayser et al., 2016). Thus, reactance is stimulated when a message such as the one on barrier gestures prohibits a specific behaviour, asks an individual to abandon a desired goal or contains a perceived threat. It will be manifested in an attempt to restore autonomy, which results in the desire to engage in the prohibited behaviour, a refusal to adopt the prescribed health behaviour, or an aggressiveness towards the source of the message (Bessarabova & Massey, 2019; Dhanya & PricildaJaidev, 2018). Psychological reactance is therefore reactive and not proactive. It is a mixture of negative emotions and cognitions (Dillard & Shen, 2005), which precede the perception of threatened freedom and lead to resistance to health communications.
- **Reactance Theory** : explains the COVID-19 recommendations that are involved in a significant change in an individual's lifestyle would stimulate resistance and paradoxically the desirability of prohibited behaviour. Indeed, a message can lead to restrictions in the life of an individual without perceiving a threat to his autonomy. The perception of a threat to

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freedom depends on a limit point. This point is reduced when health communication involves preventive measures in an individual in the absence of any symptoms, an indefinite duration of prescriptions/proscriptions and/or encourages healthy behaviour and discourages unhealthy behaviour (Reynolds-Tylus, 2019). Psychological reactance thus, seems to be a process taking into account when to look at the targets of persuasive and preventive communication. It manifests itself in young people and in adults as well (Miller et al., 2020), consciously or unconsciously (Wellman & Geers, 2009). This behaviour is influenced by several factors. On one hand, because it is supported by negative emotions and cognitions (Dillard & Shen, 2005) and that the current health situation leads to the same type of emotion (Lima et al., 2020), and on the other hand, that COVID-19 seems to direct speeches towards beliefs in the divine, fate, destiny, luck; we will retain here two particular factors: emotional intelligence (EI) and fatalism.

- **Fatalism** : Fatalism is a set of beliefs according to which the world and the course of an individual's life are pre-established by a supreme being and follow an inescapable way where the course of events escapes human control (Mvessomba et al., 2017; Thornton et al., 2019). This set of beliefs leads to information processing characterized by inhibition of will and effort, because the fatalist believes that destiny is defined from birth by a deity. This leads to perceptions of helplessness and hopelessness, as well as supernatural/natural attributions (Messanga, 2012) over life events based on the concepts of fate, destiny, luck, predestination and divine. The work of Shen et al. (2009) have shown that fatalism is both a one-dimensional and a multi-dimensional construct, made up of predetermination, luck and pessimism. Predetermination is a belief in a world predefined by divine order, where COVID-19 is seen as a punishment that only God can lift. Luck, for his part, is a belief that health is a matter of random or fate, and even our behaviours cannot help us prevent or avoid disease. Being infected of coronavirus then seems like a stroke of bad luck. Pessimism meanwhile is a belief that our behaviours can only produce negative consequences and that the death is inevitable if infected with the coronavirus. In short, fatalistic beliefs are universal (Maercker et al., 2019). They are accentuated by a very high exposure to health information through the media and promote the adoption of inappropriate behaviours to fight cancer, cardiovascular disease, HIV / AIDS, etc. (Lee & Chae, 2016; Maercker et al., 2019; Mvessomba et al., 2017; Ramondt & Ramírez, 2017).
- **Emotional intelligence** : Emotional intelligence (EI) is a person's ability to identify, assess, control and express their emotions and those of others. It helps the individual to understand and use feelings in their communication with others, in their decision-making and in their actions. It is also a set of non-cognitive skills, usually referring to several behavioural predispositions based on emotions and which affect the way an individual cope with environmental demands and pressures (Bar-On, 2012; Petrides & Furnham , 2003). Emotions involve in almost everything we do. Emotionally intelligent people are aware of this and use their thoughts to manage their emotions, instead of being managed by them. More so, EI is a factor of physical and psychological health (Martin et al., 2010). Indeed, it increases resilience and facilitates resistance to environmental aggressors. In this sense, it mediates the relationship between stress and health (Extremera & Fernandez-Berrocal, 2002), reduces the risk of developing psychological disorders (Hertel & Schu, 2009), of adopting risky health behaviours and increases positive health behaviours (Campo et al., 2005).Thus, EI leads to adequate behaviour change with better management of ourselves and a better relationship with others. These EI skills are more about the trait than about the ability (Martin et al., 2010). The theory of emotional intelligence emphasizes how an individual processes emotional information to gain decision-making benefits. It postulates that individuals who perceive, understand, use and manage emotions better are more adjusted to daily demands. Recent literature highlights three models of emotional intelligence:

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knowledge, skill and trait (Laborde et al., 2015). The knowledge level of EI refers to what an individual knows about emotions and how to deal with emotional situations. Skill does not refer to what an individual knows, but to what he can do. It is the ability of an individual to use emotional knowledge in the face of emotional situations. The trait refers to an emotional disposition, which reflects the general tendency to behave in a certain way in an emotional situation. It is about what the individual usually does and not what can do or what he knows. Individuals with a high EI trait understand their emotions and manage them in a way that promotes well-being (Furnham & Petrides, 2003). The Emotional Intelligence Trait Questionnaire (TEIQue) is the only one that has been linked to neurophysiological parameters such as heart rate variability, as well as salivary cortisol (Laborde et al., 2015). This is what justifies the choice of this model in this study. Moreover, in terms of health, the EI trait is more relevant insofar as it is a protective and well-being factor; while, skill predicts stress and dysfunction in both youth and adults (Davis & Humphrey, 2012).

- **Emotional intelligence, Age, Fatalism** : Several reports on the relationship between EI and age suggest that EI increases over time (Antoñanzas, 2017; Gahnizadeh & Moafian, 2011; Gauthier & Larivée, 2007; Rippeth, 2003). In fact, EI of adults is higher than that of adolescents, both at general level and specific skills level such as the perception, understanding and use of emotions (Mayer et al., 2000). Among young people under 25, there is no age effect on EI (Gahnizadeh & Moafian, 2011). Between adults an increase level of EI was observed up to the age of 65, as there are no studies going above this age (Gauthier & Larivée, 2007). In general, very few studies have explored the relationship between age and EI. The present study also attempts to fill this gap by comparing the EI level of young to adult population. Regarding the relationship that EI has with fatalism, only a study (Johnson, 2018) has explored it before. It was about South American teenagers. It appears that adolescents who are less emotionally intelligent are also fatalistic. They experience more negative affects, anger, frustration, and irritation. This study also explores the relationship between EI and fatalism, this time among African adolescents and adults.

There is hardly any study on fatalism and EI. There are a few on EI and psychological reactance. On a clinical population, Dowd et al. (1994) showed that certain characteristics of low EI such as lack of self-control and interpersonal skills, poor self-image, lack of attention to self and others were associated to high psychological reactance. Similar results were obtained with a prison population. Psychological reactance was positively related to stress and to several aspects of anger such as angry arousal, hostile outlook, and a focus on anger-provoking situations (Dowd, 2002). Among consumers, it has been shown that EI is negatively linked to an unfavorable predisposition to change, on the other hand, it is a factor in individual adaptation to change (Provost, 2011). Generally, EI and reactance are negatively associated and influence the same types of behaviour: withdrawal, conflict, conformism, etc. (Middleton et al., 2015). On health behaviours in general and prevention behaviour in particular, no study has yet explored the relationship between EI and psychological reactance. However, separate studies (Jung et al., 2010) show that on the one hand reactants have difficulty in meeting medical recommendations, on the other hand, emotional intelligents observe prescriptions. Thus, another objective of this study is to explore the relationship between these two processes in a prevention context of a pandemic (COVID-19). Another secondary objective of this study is to explore the relationship between fatalism and emotional reactance. In the literature, this relationship has not yet been directly studied. Rather, several studies have examined the relationship between fatalism and some indicators of reactance such as resistance to change or the adoption of prohibited behaviours (Dowd, 2002). These studies show that fatalism has a negative correlation with screening (Espinosa de los Monteros & Gallo, 2011), prevention (Perfetti, 2017) and therapeutic adherence (Cohn & Esparza del Villar, 2015; Mvessomba et al. ., 2017). Overall, the work on fatalism shows how it operates in the personal and social life of the individual and leads to inaction both preventively and curatively. The fatalists have inappropriate health behaviours on all aspects: prevention, screening and treatment. However, although several studies show the relationship between fatalism and the adoption of proscribed behaviours, very few

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studies examine this link empirically (Cohn & Esparza del Villar, 2015).

2. Study objectives and hypoteses

The main objective of the present research is to study the relationship between fatalistic beliefs and psychological reactance mediated by EI. It allows us to explore why a fatalist may not be reactant. So far no study in the literature has demonstrated the mediating effect of EI on the relationship between fatalistic beliefs and psychological reactance. Furthermore, given the fact that the work of Shen et al. (2009) conceptualize fatalism from a unidimensional and multidimensional perspective, this study also examines the two perspectives in this ternary model. This approach has the advantage of being able to determine which of the dimensions of fatalism has the most important effect in this mediating relationship. Indeed, one of the limitations of previous studies was that they did not empirically show the dimension of fatalism that most affects health behaviours (Cohn & Esparza del Villar, 2015). This major objective and the secondary objectives presented above are underpinned by three main hypothesis. We hypothesized first that EI mediates the relationship between fatalism (H1a), predetermination (H1b), luck (H1c), pessimism (H1d) and psychological reactance towards messages on barrier gestures to COVID-19. Consistent with the work on age and EI, we also postulate that the EI level of adults is higher than that of young population (H2). Considering also that the level of IE of young people seems relatively low, we further postulated that EI mediates the relationship between fatalism and psychological reactance in adults and not in young people (H3).

3. Data collection

Participants and Procedure : Two hundred and twenty-seven people aged between 15 and 61, recruited through the convenience sampling technique, have been volunteered for this study (99 females and 125 males; Mage = 27.89, SDage = 8.88). In this sample we were able to identify 135 young ([15; 29 years old], 63 females and 72 males; Mage = 23.02, SDage = 4.03) and 66 adults ([15; 29 years old], 25 females and 41; males Mage = 37.84, SDage = 7.70) 26 participants were excluded from these two sub-categories because they did not specify their age. All participants were enrolled in randomly either in the street or in their home, during the early days of intense public health measures in Cameroon (From May to June 2020). They completed a self-administered questionnaire and returned it to the interviewer. The participants were from several socio-professional spheres. But, individuals in the health sphere were systematically excluded from the study because of their proximity and their knowledge of the pathology without the necessary help of persuasive messages.

Measures : Hong Psychology Reactance Scale ([HPRS], Hong & Page, 1989; Shen & Dillard, 2005). The HPRS measures the personality trait relating to the propensity to feel psychological reactance with a self-reported 14-item scale. Reactance is assessed as both one-dimensional and multi-dimensional construct. As a multidimensional construct, it has four dimensions: the emotional response to limited choice (eg, “it makes me angry when my freedom of choice is limited”), reactance to obedience (eg, “legal constraints trigger a feeling of resistance in me”), resistance to the influence of others (eg, “I resist other people's attempts to influence me”) and resistance to recommendations (eg, “I consider the opinion of others to be unwelcome”). The participants were invited to position themselves about the WHO and government recommendations on the fight against COVID-19, on a five-point Likert-type response design ranging from strongly disagree (1) to strongly agree (5). Analysis of the internal consistency index (α) showed that the one-dimensional construct was better adjusted for our three populations: general α = .58; young α = .56 and adult α = .67. Emotional Intelligence Trait Questionnaire Short Form ([TEIQue-SF], Mikolajczak et al., 2007; Petrides & Furnham, 2003). The TEIQue-SF is the reduced version of the TEIQue. It assesses an individual's emotional intelligence trait using a self-reported 30-item scale (eg, “Expressing my emotions in words is not a problem for me”). This short version primarily measures the emotional intelligence trait as a one-dimensional construct. The items are presented to the participants accompanied by a seven-point Likert-type response design ranging from strongly disagree (1) strongly agree (7). Analysis of the internal consistency index (α) showed good internal consistency, after deletion of item 25 for the general α = .70 and the adult population α = .70. For the young population, no item was deleted α = .68. Fatalism Scale (Shen et al., 2009). This scale assesses the degree of fatalistic belief as both unidimensional and multi-dimensional construct. It is made up of 20 items divided into three dimensions:

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predetermination (eg, “My health is determined by fate”), luck (eg, “I will get coronavirus if I am unlucky”) and pessimism (eg, “I will suffer a lot from bad health”). For each item, participants were invited to position themselves on a five-point Likert-type response design ranging from strongly disagree (1) to strongly agree (5). Analysis of the internal consistency index (α) showed that the values oscillate between low and good for the three populations: general (unidimensional fatalism α = .77; predetermination α = .76; luck α = .74; pessimism α = .46), Young (unidimensional fatalism α = 77; predetermination α = .75; luck α = .80; pessimism α = .35) and adult (unidimensional fatalism α = 77; predetermination α = .77; luck α = .67; pessimism α = .67).

Ethical considerations : The potential participants were first informed verbally of the objective of the study, of the confidential and voluntary nature of their participation, as well as the possibility of withdrawing from the study at their desired time. They were then given an informed consent form which they were asked to read and sign if they approved the study. For participants under the age of 18, they were recruited only from homes, after their parents signed the informed consent form.

4. Data analysis

Descriptive statistics : We undertook a correlation analysis between the different variables of the study. It allowed us to test whether our different variables are related, through the estimation of the Pearson coefficient (r) under SPSS 23. This analysis is a preliminary condition for a mediation analysis.

Variance analysis : We undertook an analysis of variance to compare the level of IE of young people to that of adults. This analysis was performed under SPSS 23.

Mediation analysis : To analyse our hypotheses, we performed a mediation analysis by structural equation models. These evaluations were undertaken using the OLS regression based path analysis method (Hayes, 2018). A bootstrapping with 5000 iterations of resampling was carried out with the PROCESSv3.4.1 macro under SPSS 23. This mediation analysis has two steps generating standard coefficients which make it possible to evaluate the mediator effect (Hayes, 2018). The first consists in estimating the effect of fatalistic beliefs on psychological reactance by controlling the EI: it is the direct effect c '. The second is the indirect effect ab. This is the effect of fatalistic beliefs on psychological reactance through EI. It consists first of all in estimating the effect of fatalistic beliefs on IE (a), then, the effect of EI on reactance (b), finally, the effect of fatalistic beliefs on the psychological reactance passing through EI as the product (ab) of the preceding causal sequences. It also means this mediation analysis method allows us to claim causal relationship between variables (Hayes, 2018).

[III] RÉSULTATS

Descriptive statistics

We estimated the mean, standard deviation and correlation coefficient for each study variable based on the general, young and adult populations (Table 1). For the general population, it appears that those who are more emotionally intelligent are less reactant to messages on barrier measures $r(227) = -.21$, $p \leq .01$ and less fatalistic $r(227) = -.20$, $p \leq .01$. Indeed, they do not believe that their health depends on luck $r(227) = -.22$, $p \leq .01$, or fate $r(227) = -.16$, $p \leq .05$. On the other hand, reactants believe COVID-19 is beyond human control $r(227) = .44$, $p \leq .01$, and that they will only be infected if they are unlucky $r(227) = .23$, $p \leq .01$, or if destiny has decided so $r(227) = .44$, $p \leq .01$; or because life is only made of negative events $r(227) =. 22$, $p \leq .01$. With regard to young populations ([15; 29 years old]), those who believe that they are not infected with the coronavirus because they are lucky, find difficult to manage their emotions and those of others $r(135) = -.19$, $p \leq .05$. Young people who are reactants are also fatalistic $r(135) =. 38$, $p \leq .01$ and think COVID-19 is a matter of luck $r(135) =. 22$, $p \leq .01$ and destiny $r(135) = .43$, $p \leq .01$. As for adults ([30; 61 years old]), finally, those who are motivated to undertake actions to regain their autonomy reduced by barrier behaviours, are fatalistic $r(66) = .44$, $p \leq .01$. They are also those who always view their future health in a negative light $r(66) = .35$, $p \leq .01$ and believe that health is predetermined from birth $r(66) = .34$, $p \leq .01$. In addition, adults who process emotional information effectively are not fatalistic $r(66) = -.25$, $p \leq .05$, do not believe COVID-19 depends on fate $r(66) = -.28$, $p \leq .05$ and do not seek to recover their freedom restricted by barrier measures $r(66) = -.32$, $p \leq .01$. Thus, in adults, unlike young people, we observed a correlation between EI, psychological reactance and fatalism. This asymmetry of results led us to compare the level of EI

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between these two sub-categories. Also, the significant correlations were observed and made it possible to undertake structural equations analyses.

Structural equations and analysis of variance for general population

Models of structural equations with fatalism, predetermination, luck, pessimism, EI, and psychological reactance were undertaken for data from the general population (Figure 1). Analysis of these equations shows that fatalism $\beta = -.26$, $t(227) = -3.07$, $p \leq .01$, predetermination $\beta = -.16$, $t(227) = -2.45$, $p \leq .01$, and luck $\beta = -.18$, $t(227) = -3.35$, $p \leq .01$ are relevant predictors of EI. They explain respectively 26%, 16% and 18% of the variance of the EI. In other words, a high EI can be explained by a low level of fatalism, predetermination and luck. EI also has an effect on psychological reactance when controlling fatalism $\beta = -.09$, $t(227) = -2.16$, $p \leq .05$, predetermination $\beta = -.10$, $t(227) = -2.44$, $p \leq .05$, luck $\beta = -.12$, $t(227) = -2.61$, $p \leq .01$, and pessimism $\beta = -.13$, $t(227) = -3.04$, $p \leq .01$. Which means that when individuals have an equal level of fatalism, predetermination and luck, the skill to understand and use emotional information reduces the need for adopting behaviour contrary to COVID-19 guidelines. In the same sense, when individuals have an equal level of EI, fatalism $\beta = .36$, $t(227) = 6.60$, $p \leq .01$, predetermination $\beta = .28$, $t(227) = 6.73$, $p \leq .01$, chance $\beta = .11$, $t(227) = 2.90$, $p \leq .01$, and pessimism $\beta = .15$, $t(227) = 3.15$, $p \leq .01$ strengthens the motivation to regain the feeling of freedom even if it involves dangerous behaviours for one's health. As for the comparison between the level of IE of young MEI = 4.68 and adults MEI = 5.07 (Figure 1), it appears that adults are more competent to effectively process an emotional stimulus $F(1.199) = 13.285$, $p < .001$, $\eta^2 = 0.63$ (H2 confirmed). From these results, it seemed relevant to assess whether this mediation model is also adapted within each specific population.

Structural equations for young and adult populations

Models of structural equations with fatalism, predetermination, luck, pessimism, EI and psychological reactance were also undertaken for data from young and adult populations (Figure 2). For the young population (n = 135), the analysis of the structural equations reveals that only luck can explain up to 15% of the variance of the EI $\beta = -.15$, $t(135) = -2.28$, $p \leq .05$. In other words, the belief that health depends on luck, diluted in young people the skill to perceive, express and manage their emotions and those of others. When controlling for this belief, there is no effect of EI on psychological reactance $\beta = -.05$, $t(135) = -0.74$, $p = .46$. Thus, among young people with the same level of fatalism, EI can neither reduce nor increase their degree of reactance. On the other hand, for young people with a similar level of EI, the chance $\beta = .12$, $t(135) = 2.47$, $p \leq .01$, predetermination $\beta = .30$, $t(135) = 5.42$, $p \leq .01$ and fatalism $\beta = .34$, $t(135) = 4.68$, $p \leq .01$ increase the tendency to adopt reactant behaviours. For the adult population (n = 66), fatalism $\beta = -.32$, $t(66) = -2.10$, $p \leq .05$ and predetermination $\beta = -.25$, $t(66) = -2.29$, $p \leq .05$ have an effect on IE. Adults who avoid doing supernatural attributes relating to COVID-19, are able to use emotions to facilitate thinking. That skill also has an inhibitory effect on psychological reactance for the adults with an equal level of fatalism $\beta = -.17$, $t(66) = -1.97$, $p \leq .05$, predetermination $\beta = -.19$, $t(66) = -2.06$, $p \leq .05$, chance $\beta = -.23$, $t(66) = -2.44$, $p \leq .05$ and pessimism $\beta = -.24$, $t(66) = -2.73$, $p \leq .01$. However, for adults with an equal level of EI, those beliefs increase the motivation to engage in the prohibited behaviour. Except luck which has no effect $\beta = .12$, $t(66) = 1.34$, $p = .19$.

Indirect effect (ab) of fatalism on psychological reactance through EI

To rule on our different hypotheses, we considered the main indicator of a simple mediation model (Hayes, 2018): the indirect effect (Table 2). For the general population, there is a mediating effect of EI on the relationship between fatalism and psychological reactance ab = .03, 95% CI = [.00; .06] (H1a confirmed). For each unit of fatalism, psychological reactance increases by .03 in those who are less emotionally intelligent. In other words, The belief that the course of life in this pandemic period follows an inescapable way reduces the skill of individuals to process emotional information effectively and leads to the motivation to undertake behaviours to regain their freedom feeling, even if those are dangerous to health, and vice versa. Indeed, the ability to regulate emotions to promote intellectual development and emotional well-being has been shown to inhibit fatalism and psychological reactance. Likewise, an indirect effect of predetermination on psychological reactance through EI was also observed ab = .02, 95% CI = [.00; .06] (H1b confirmed). More specifically, the belief that health is predefined in advance regardless of the behaviours

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adopted, dilutes the ability to express and use one's emotions and those of others, and leads to the heightened need for adopt prohibited health behaviours. The result is the same for the belief in randomness ab = .04, 95% CI = [.00; .06] (H1c confirmed). Indeed, luck deteriorates the competency to understand and use emotional information, which in turn increases the desire to resist COVID-19 recommendations. However, for the young population, no indirect effect was observed. There is therefore no mediating effect of EI on the relationship between fatalism and psychological reactance ab = .01, 95% CI = [-.02; .07]. By contrast, for the adult population, there is a mediating effect of EI on the relationship between fatalism and psychological reactance ab = .06, 95% CI = [.00; .15] (H3 confirmed). In adults, beliefs about the inevitability of future events and the denial of personal control over health increase anger related to restrictions imposed by barrier measures by reducing emotional skills. That leads to an increase of .06 in psychological reactance. Finally, for the two specific populations, no indirect effect of the dimensions of fatalistic beliefs (predetermination, luck, pessimism) on reactance was observed.

[III] DISCUSSION

The main objective of this study was to explore the mediating role of EI on the relationship between fatalistic beliefs and psychological reactance vis-à-vis messages on barrier gestures. Analysis of the results shows that the skills conferred by EI eliminate fatalistic beliefs and reduce reactance to messages on barrier gestures to COVID-19. Individual preventive behaviours are currently the most effective solution to eradicate the spread of COVID-19. To this end, awareness-raising communications on appropriate actions are multiplying through the media. These messages produce a boomerang effect which is amplified by the belief that our health is defined in advance by a supernatural being and attenuated by our ability to process emotional information effectively. This EI strengthens adherence to awareness campaigns and eliminates negative cognitions and emotions. Adults have been shown to be more emotionally intelligent than young people.

Several possibilities can explain the available results. The first relates to the theory of EI. Indeed, effective processing of emotional information also involves functional cognitive processing (Mayer et al., 2000). This give the reason why emotionally intelligent individuals are less reactant to messages on barrier gestures. Their abilities to perceive, understand and manage emotions neutralize beliefs in divinity-based health and / or bad luck, which are responsible for psychological reactance. EI shifts supernatural discourses on COVID-19 towards rational media communications that advocate the place of human will in eradicating the spread of this pandemic. Supernatural attributes which are indicative of fatalistic beliefs, are based on fear, despair, feelings of helplessness and stimulate risky behaviour (Messanga, 2012; Mvessomba, 2017). However, such emotions are taken care of by EI (Bar-On, 2012; Petrides & Furnham, 2003). This explains why EI alters predetermination, luck, fatalism and inhibits any motivation to regain a freedom involving problematic behaviour for health.

Another possible explanation likely to find a favorable echo is related to work on persuasive communication in health. Indeed, messages with a high level of control, insisting on duty or obligation, have a boomerang effect (Rosenberg & Siegel, 2017). As a result, the psychological reactance observed in our participants can already be justified by the fact that the messages on COVID-19 barrier gestures disseminated through the media use an injunctive tone. In addition, repeated exposure to health communication through the media stimulates fatalism (Ramondt & Ramírez, 2017). In this period of pandemic, all the media are constantly broadcasting information on the health situation. They stress the disasters of disease and the lack of treatment. This can lead participants to develop negative emotions (fear, despair, etc.) and beliefs that lead to believe that COVID-19 is a fatality that can only be avoided too little regardless of the measures taken. . This belief in the inability of the human will to modify the situation therefore accentuates psychological reactance and justifies resistance to the adoption of barrier gestures (Bessarabova & Massey, 2019; Reynolds-Tylus, 2019). In such a context, EI offers the individual skills to actively process these aversive emotions and cognitions, and to adopt health behaviours conducive to their well-being (Bar-On, 2012). Another explanation for the observed rebound effect may relate to the mental suppression model. (Dumont & Yzerbyt, 2001). It is a conscious process where one avoids one or more precise thoughts, which paradoxically come back unconsciously in a more intense way. He can be initiated by a variety of triggers, including an explicit outside instruction to not evoke certain thoughts (persuasive message). This model seems relevant for posts that recommend

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avoiding touching your eyes, mouth or nose. A study is necessary to rule effectively that possibility.

It turns out that adults are indeed more emotionally intelligent than young people. This result in accordance with our hypothesis seems at first sight paradoxical. In fact, older people have experienced various challenges such as the loss of a loved one, reduced health, unfulfilled wishes, etc. which were believed to induce negative affects and make them emotionally vulnerable. However, our results and scientific evidence suggest that they are more apt to use emotions to maintain and increase their well-being (Carstensen et al., 2003; Labouvie-Vief & Medler, 2002; Blanchard-Fields , 1997). In fact, age is positively associated with improved emotional memory and increased positive affects (Carstensen et al., 2003; Carstensen & Turk-Charles, 1994). This implies that adults recall emotional material more easily (Carstensen & Turk-Charles, 1994), rely more on emotional content to develop representations of others (Carstensen & Frederickson, 1998), and make more use of emotions to fix social problems (Blanchard-Fields, 1997). All these skills justify the superiority of emotional intelligence that we have observed in adults compared to young people. In general, there is evidence that adults, because of their experiences, are more able to process emotions effectively and integrate them into cognitions about life in general in a way that promotes well-being.

The difference in EI observed may explain the confirmation of the third hypothesis. The relatively low level of EI of young people explains why it does not mediate the relationship between fatalistic beliefs and psychological reactance. Yet this mediation has been observed in adults. According to Carstensen et al. (2003), giving that adults are more emotionally intelligent, they must be better able to self-regulate their emotions and to avoid them interfering negatively in their social life. Clearly, in the face of despair, anxiety, stress, etc. caused by the health situation, which results in supernatural attributions on COVID-19 and leading to reactance, EI is proving to be crucial in adults. It allows them to maintain positive emotions and limit the persistence of negative emotions. Through this mechanism of emotional regulation, there is a reduction in both fatalistic beliefs and psychological reactance. Because, these two mechanisms are based on a set of negative emotions (Messanga, 2012; Shen & Coles, 2015). Unlike adults, young people do not enjoy the benefits of EI in the same way. This last therefore turns out to be a catalyst for health behaviour, specifically prevention behaviour for adults.

The results of this also respond to the call of Cohn and Esparza del Villar (2015) to empirically determine the most important dimension in the model of fatalism of Shen et al. (2009). A gap of this model was that very few works have tried to demonstrate the most relevant dimension between predetermination, luck and pessimism. It turns out that the most important dimension in this study is predetermination. Overall, it obtained the highest cronbach alpha scores in the general population as well as in specific populations. In addition, it explains the greater proportion of variance in EI and psychological reactance. It is followed by luck and pessimism respectively. This means that fatalistic beliefs seem to be reduced more to the belief in destiny and that the latter alone can already effectively account for fatalism. Moreover, the results showed that among the young population, luck is the second most important factor, while among adults, it is pessimism. Young people perceive themselves as being at the active flower of life and foster projects, get involved in them despite environmental and structural obstacles. This can therefore predispose them to a certain optimism about life in general and a strong propensity to believe in luck. However, adults see themselves as being in the middle or at the end of their life. In addition, they have already experienced several negative events, which remind them of the harsh realities of life, and can justify this pessimistic tendency.

This study confirms that of Johnson (2018) on the relationship between EI and fatalism and that of Middleton et al. (2015) on the relationship between EI and reactance. It also empirically demonstrates a direct relationship between fatalistic beliefs and psychological reactance. However, it also has a number of limitations. First, the pessimism-driven mediation hypothesis has been overturned. This result can be explained by the fact that this dimension presented a very weak internal coherence ($\alpha = 0.46$). Another limitation of this study relates to the sample difference between the young population and the adult population. A study with larger samples is essential. Finally, this study is also limited by the fact of having used self-reported measures to empirically demonstrate a model that was still unexplored in the literature. Indeed, it has been proven that these types of measures often lead to social desirability (Spector, 2006), which may also justify why the direct and indirect effects observed were small

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[IV] CONCLUSION

The literature on preventive health behaviours pays great attention to psychological reactance. Very few studies have examined its relationship to fatalism or EI, and there is a lack of knowledge on the relationship between the three. This research has made it possible to fill this gap by examining the mediating role of EI on the relationship between fatalistic beliefs and psychological reactance in a context of health prevention. The results confirmed the mediating effect of EI on the relationship between fatalism and psychological reactance to barrier measures messages in adults. The boomerang effect of messages on COVID-19 barrier gestures in general and in adults in particular is attenuated by emotional self-efficacy and accentuated by cognitive treatments stimulated by awareness messages. These messages can be perceived as less threatening if we add to them at the end of the restoration postscripts or if we modify their contents in such a way that they stimulate pleasant emotions (Rosenberg & Siegel, 2017). Preventive behaviours are the best solution to fight against covid-19 today. Our results give an insight into the EI contribution to the adoption of these behaviours in adults who are most vulnerable to the disease. On the other hand, young people are certainly less vulnerable to COVID-19, but the fact that they are asymptomatic makes its eradication from the community more difficult. Their relatively low level of EI emphasizes the difficulty, because it won't really alleviate their degree of fatalism and reactance. There is therefore a need to strengthen their level of EI. Fortunately, the level of IE can be improved with the right interventions (Campo et al., 2015). Further studies would intent to explore the application of an EI intervention program at the community level.

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Table 1 : Means, standard deviations and correlations different variables according to the type of populati

			Average	Standard deviation	1.	2.	3.	4.	5
Youth population n = 135		Emotional intelligence	4.81	.74					
		Psychological Reactance	2.84	.51	-.21**				
		Fatalism	2.63	.57	-.20**	.44**			
		Pessimism	3.20	.69	-.09	.22**	.65**		
		Luck	2.06	.87	-.22**	.23**	.60**	.21**	
		Predeterminatio n	2.52	.74	-.16*	.44**	.88**	.35**	.33**
Adult population n = 66		Emotional intelligence	4.66	.71					
		Psychological Reactance	2.88	.51	-.11				
		Fatalism	2.64	.58	-.14	.38**			
		Pessimism	3.20	.69	-.14	.15	.68**		
		Luck	2	.90	-.19*	.22**	.66**	.28**	
		Predeterminatio n	2.57	.72	-.05	.43**	.89**	.38**	.41**
		Emotional intelligence	5.07	.64					
		Psychological Reactance	2.77	.53	-.32**				
		Fatalism	2.55	.54	-.25*	.44**			
		Pessimism	3.21	.72	-.05	.35**	.72**		
		Luck	2.07	.73	-.17	.16	.33**	.05	
		Predeterminatio n	2.35	.75	-.28*	.34**	.88**	.42**	.12

Note. $*p \leq .05$. $**p \leq .01$.

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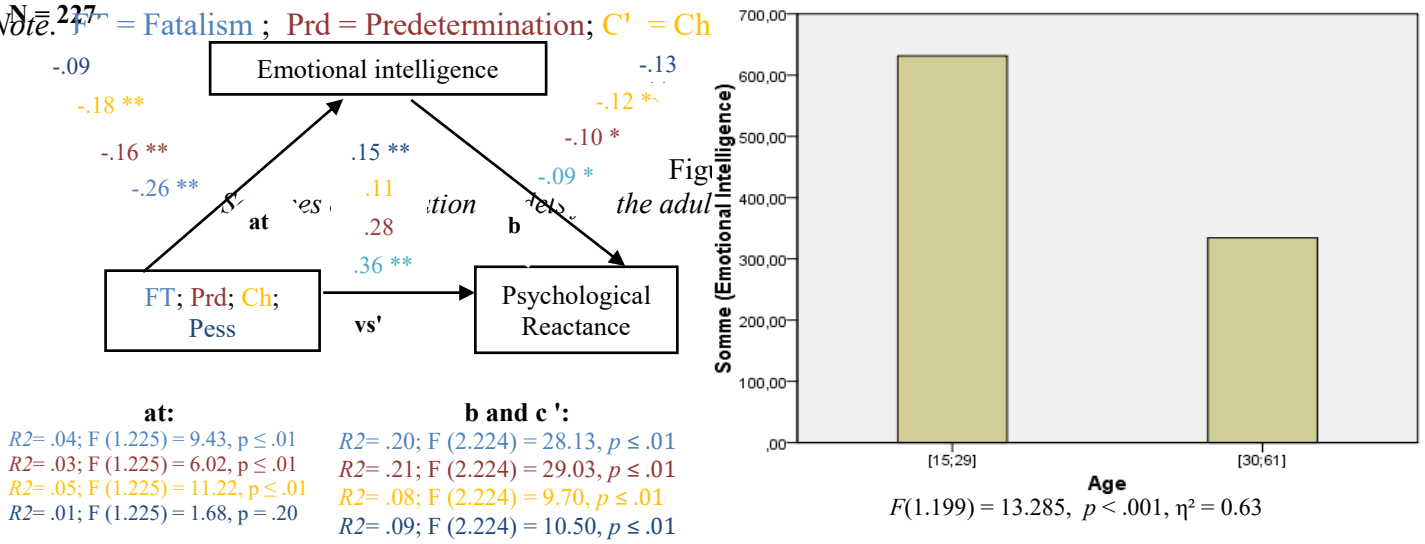
Figure 1 : Schematics of the mediation model and analysis of variance for the general population



Note. FT = Fatalism ; Prd = Predetermination; Ch = Chance; Pess = Pessimism. *$p \leq .05$. **$p \leq .01$.

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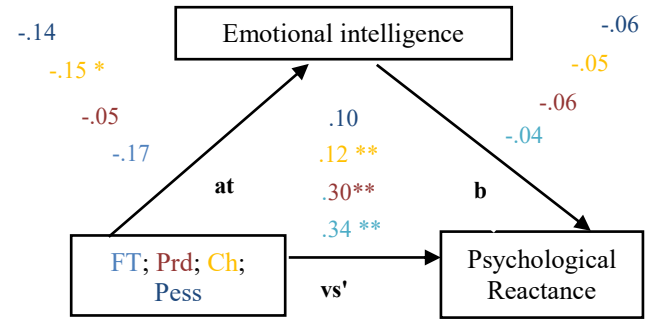
n = 135



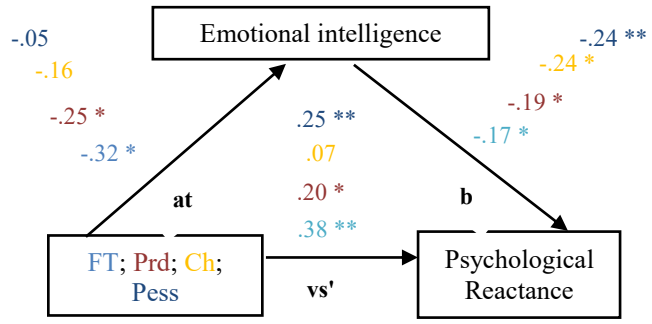
at:

R2= .02; F (1.133) = 2.51, *p* = .12
R2= .00; F (1.133) = 0.31, *p* = .58
R2= .04; F (1.133) = 5.19, *p* ≤ .05
R2= .02; F (1.133) = 2.54, *p* = .11

b and c ':

R2= .15; F (2.132) = 11.83, *p* ≤ .01
R2= .19; F (2.132) = 15.57, *p* ≤ .01
R2= .05; F (2.132) = 3.84, *p* ≤ .05
R2= .03; F (2.132) = 1.96, *p* = .14

n = 66



at:

R2= .06; F (1.64) = 4.41, *p* ≤ .05
R2= .08; F (1.64) = 5.23, *p* ≤ .05
R2= .03; F (1.64) = 1.93, *p* = .17
R2= .00; F (1.64) = .16, *p* = .69

b and c ':

R2= .24; F (1.63) = 9.96, *p* ≤ .01
R2= .17; F (1.63) = 6.63, *p* ≤ .01
R2= .11; F (1.63) = 4.05, *p* ≤ .05
R2= .22; F (1.63) = 8.71, *p* ≤ .01

Note. FT = Fatalism ; Prd = Predetermination; Ch = Chance; Pess = Pessimism.
**p* ≤ .05. ***p* ≤ .01.

Table 2

Total effect c, direct effect c 'and indirect effect ab of Fatalism on psychological reactance

VD	VM	Antecedents	General population			Youth Population			Adult population		
			vs	vs'	Ab	vs	vs'	ab	vs	vs'	ab
Psychological	Emotional intelligence	determination	.30**	.28 **	.02 *	.30**	.30**	.00	.25 **	.20 *	.07
		Luck	.13 **	.11 **	.04 *	.13 **	.12 *	.01	.11	.07	.05
		Pessimism	.16 **	.15 **	.02	.11	.10	.01	.26 **	.25 **	.02
		Fatalism	.39 **	.36 **	.03 *	.34 **	.34 **	.01	.44 **	.38 **	.06 *

Note. VD = dependent variable; MV = mediator variable
* p ≤ .05. ** p ≤ .01.

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Editor-In-Chief: H. Blaise Nguendo Yongsi

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