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IT'S NOT WHAT IT SEEMS! THE MEDIATING ROLE OF SELF-EFFICACY IN THE RELATIONSHIP BETWEEN TRAIT-ANXIETY AND INTOLERANCE OF UNCERTAINTY DURING COVID-19 PANDEMIC

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Abstract: *The current research is aimed at studying the relationship between trait anxiety and intolerance of uncertainty, with its both facets: the inhibitory and the prospective anxiety and to establish whether or not the general self-efficacy plays a mediating role between the trait-anxiety and intolerance of uncertainty. Results show that a partial mediation takes part when general self-efficacy mediates the relationship between the intolerance of uncertainty, inhibitory anxiety, but a limited mediation when general self-efficacy interferes in the relationship between the trait-anxiety and intolerance of uncertainty, perspective anxiety. The main benefit of this paper is to demystify the impact of self-efficacy especially in unexpected, unknown situations, such as the COVID-19 pandemic.*

Key words: *trait anxiety, intolerance of uncertainty, self-efficacy, COVID-19 pandemic, mediation.*

1. Introduction

Since the outbreak of the coronavirus (COVID-19) pandemic (WHO, 2020), the general public mental reported considerably elevated adverse mental health conditions associated with COVID-19. Several reports show that people experienced at least one adverse mental or behavioural health conditions related to experiencing the disease or, at least, when confronted with the possibility of contacting the disease (National Centre for Health Statistics, US, 2020, 2019; European Parliament, 2020).

The impact of the pandemic is not negligible since symptoms of anxiety disorder and depressive disorder were reported to having increase considerably both in the United States and Europe. Namely, in United States, during April–June of 2020, symptoms of

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anxiety disorder or depressive disorder increased (30.9%) compared with the same period in 2019 (Czeisler et al., 2020), whereas in some countries in Europe, the prevalence of anxiety and depression even doubled (Ciucci, 2020).

In the endeavour to teach general public to better manage the emotions during the COVID-19 Pandemic, formulated various strategies of diminish anxiety, for instance, considering that one of the most powerful way to decrease anxiety, social support (Starkman, 2020), was not available as freely as before pandemic due to lockdown and other kind of restrictions, including hospitalization and isolation /quarantine.

As an example, while instructed to recognize that it is normal to have anticipatory anxiety, people were advised by the Department of Psychiatry of Michigan University, to also set aside a certain amount of time for worrying as well as practicing staying in the present and engaging in certain relaxation (Starkman, 2020).

Our goal for the current paper is to show how managing intolerance of uncertainty (IU), namely anticipatory /perspective anxiety and inhibitory anxiety are felt if considered anxiety as personality trait and whether or not the relationship between anxiety as a trait and intolerance of uncertainty (with its both facets: perspective and inhibitory) is mediated by the self-efficacy. These two objectives are meant to shade a light on the proposed subject that, even if studied (Swee et al., 2018) was not connected with the COVID-19 pandemic conditions. The current context is rather imposing people to rely more on themselves than on the support of others giving the social distancing restrictions.

2. Theoretical Framework

2.1. Trait anxiety and intolerance of uncertainty

Anxiety, as a personality trait, namely a relatively consistent personality pattern, is characterized by a stable perception of environmental stimuli (events, others' statements) as threatening (Gidron, 2013). It should be understood differently than the anxiety as a state, even if people with high levels of anxiety, often experience and express also state anxiety, in situations in which most people do not experience such responses (Gidron, 2013). The state is, mainly, defining as a temporary emotional condition varying in intensity over time and according to the situation (Laux et al., 1981; Spielberger, 1988).

This study discusses the trait-anxiety, namely a sub-clinical construct, part of the neuroticism as personality meta-factor (Costa & McCrae, 1980, 1985) and does not refer to anxiety as understood in the anxiety disorder. Nevertheless, trait anxiety is related to various neurophysiological responses, such as the ones met during COVID-19 pandemic.

Authors argued that high trait-anxious people demonstrate greater activity in the amygdala and reduced activity in the inhibitory dorsal anterior cingulate cortex, during extinction of fear responses (Sehlmeyer et al., 2011).

Defined broadly "as cognitive, emotional, and behavioral reactions to uncertainty that bias information processing and lead to faulty appraisals of heightened threat and reduced coping" (Freeston et al., 1994), the intolerance of uncertainty (IU) was also seen

as the tendency of an individual to consider the possibility of a negative event occurring unacceptable, irrespective of the probability of occurrence (Carleton et al., 2007, Carleton et al., 2012). IU proved to be correlated to several factors among which anxiety plays a major role. Also, since the original development of the IU scale, the concept was linked to reactions to ambiguous situations, uncertainty, and worry for future events (Freeston et al., 1994).

While there was shown to be substantial evidence for the bivariate associations between IU and anxiety (Swee et al., 2018), the authors stressed on the bivariate direction of the relationship and focused on the state anxiety. The measurement of the anxiety as trait, even if measured as a continuum construct, may present insights the relationship between trait-anxiety and both facets of IU, as well as the role of general self-efficacy (GSE) in this equation.

Driven from the above information, we investigate if there is a relationship between trait-anxiety (as predictor) and IU (as criteria) for both IU facets: inhibitory (H1a) and perspective anxiety (H1b) as well as between trait-anxiety and self-efficacy (H2).

2.1. General self-efficacy as mediator

Introduced by Bandura as one core aspect of his social-cognitive theory (1977, 1997), the construct of self-efficacy includes in its definition numerous aspects, among which one's belief of being able to control challenging environmental demands by means of taking adaptive action in order to deal with certain life stressors (Schwarzer *et al.*, 1997).

Bandura explains the four major processes: cognitive, motivational, affective and selective that regulate human functioning (Bandura, 1997). In line with the scope of the current study, there are studies that have examined the relationship between self-efficacy and anxiety, defined as "a state of anticipatory apprehension over possible deleterious happenings" (Bandura, 1997). In Bandura's social cognitive theory, one's perceived sense of efficacy plays a key role in the arousal of student anxiety.

Bandura (1997) also shows that individuals experience anxiety when they believe themselves to be incapable of managing potentially detrimental events. He also says that "cognitive negativity dwells on personal deficiencies", that thing leading to undermining self-motivation and performance. In some studies, the relationship between self-efficacy and specific types of anxiety was mentioned (Xue, 1996; Matsuo & Arai, 1998).

Studies in this area identified that low levels of self-efficacy are accompanied by high levels of anxiety (Murris, 2002). Consistently with these studies are also the conclusions from a study that found that social self-efficacy negatively correlated (r =-.41*) with feelings of social anxiety. Interestingly enough, in this study, the authors show that, the values of the correlation decrease as the children grow-up, therefore the highest negative, statistically significant correlation (for all p <.01) is found in third grade students (r = -.49*) and decreases in fourth grade students (r = -.37*), respectively in the fifth grade it reaches (r = -.36*) (Wheeler & Ladd, 1982).

Authors discussed about self-efficacy as mediator, namely potentiating several relations. Namely, self-efficacy was shown to function as a mediator between personality and life satisfaction (Lent et al., 2005), as well as between personality and

subjective well-being (Fogle et al., 2002; Lent et al., 2005) and between neuroticism, extraversion, openness, and conscientiousness and subjective happiness (Strobel et al., 2011). A similar finding was shown in a study where self-efficacy negatively related to neuroticism, positively related to extraversion, openness, and conscientiousness, and had no systematic relation with agreeableness (Judge & Ilies, 2002).

An important element to be included further in the discussion is the role of self-motivation in managing the discrepancies between the outcome and an inner reference standard that "automatically triggers adjustments to reduce the incongruity" (Bandura, 1997, p.131). Based on the studies presented above, we presume that GSE mediates the relation between trait-anxiety and IUS-IA (H3a) and between trait-anxiety and IUS-PA (H3b).

3. Study Objectives

This study was conducted to examine impact of anxiety, as personality trait, on intolerance of uncertainty as mediated by general self-efficacy. It was hypothesized that trait-anxiety will positively predict the intolerance of uncertainty, conceptualized both as perspective anxiety and inhibitory anxiety. Also, it was hypothesized that general self-efficacy will mediate these relationships. We would like to also discuss the results in light of the characteristics of the COVID-19 pandemic period, since its' outburst, in March 2020.

4. Materials and Methods

4.1. Participants

The study was conducted on a Romanian convenience, non-clinic, non-probabilistic sample of 362 respondents (M_{age} = 37.90, *SD* = 11.20), 74.6% women. The respondents have completed an online survey, using a virtual testing platform, after March 2020, when the global COVID-19 outbreak was declared by the the World Health Organization's Director a pandemic (Adhanom Ghebreyesus, 2020). The inclusion and initial recruitment of the participants were made on a voluntary, snowball basis, with confidentiality assurance.

Twenty point four percent of the sample had completed high school, 39% university studies and 40.6% attended post-university studies (master and PhD). 73.2% were employed, 53.5% were married or in de facto relationships, 35.4% single, and 10.2% were widowed or divorced. Three people refrained from answering this question. 49.4% from the respondents were parents.

4.2. Instruments

Trait anxiety was measured with the 10 items scale of Anxiety (as personality trait) from the International Personality Item Pool (IPIP) (Goldberg et al., 2006, adapted in Romanian language by Iliescu *et al.,* 2015), with items like "I am afraid of many things". Internal consistency coefficient calculated for the present study was α = .88. The respondents were asked to rank on a 5-point Likert scale how frequent they feel the

states expressed by the items were true for them, where 1 was Never and 5, Always.

Intolerance to uncertainty was measured with the shorten version of the Intolerance of Uncertainty Scale (12 items) (IUS-12, Carleton *et al.*, 2007), that measures responses to uncertainty, ambiguous situations, and the future. The items are rated on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). The IUS-12 has two sub-scales (Carleton et al., 2007; McEvoy & Mahoney, 2011), namely intolerance of uncertainty inhibitory anxiety sub-scale (IUS–IA, 5 items; e.g., "When it's time to act, uncertainty paralyses me") and intolerance of uncertainty prospective anxiety sub-scale (IUS–PA, 7 items; e.g., "I can't stand being taken by surprise"). Internal consistency coefficient calculated for the present study for the IUS-IA was α = .80 and α = .78 for IUS-PA.

Self-efficacy was measured with Generalized Self-Efficacy scale (Schwarzer et al., 1995), Romanian translated version (Baban et al., 1997). The respondents were asked to best indicate their way of acting in general when faced with a difficult situation. The scale has 10 items (e.g. "I stay calm when I face difficulties, because I can rely on my ability to solve") and the answers were offered on a 4-point Likert scale, where 1 = Never and 4 = Always. The internal consistency for the present study was α = .87.

4.3. Data analysis

In order to normalize the distribution for the variables included in the study, we performed the normalization procedure based on log10 transformation and we obtained approximately normally distributed (the skewness z-value were within ±1.96) .

For reporting reasons, we back transformed our means and standard deviations to be in line with their initial measures.

Also, we performed regression-based mediation analyses to test mediation hypotheses (H3a and H3b) employing the procedures provided by Preacher and Hayes (2004, 2008) and using the PROCESS Procedure for SPSS, version 3.5.2. (Hayes, 2018). Our analyses were based on 5.000 bootstrap samples.

5. Results

Means and standard deviations, internal consistencies, and inter-correlations are presented in Table 1.

Descriptive statistics and correlations between measures Table 1

Scale	*M*	*SD*	1	2	3	4
1.Trait Anxiety	2.85	1.01	(.88)			
2.Self-Efficacy	2.94	1.01	-.39**	(.87)		
3.IUS–IA	2.25	1.02	.49**	-.34**	(.80)	
4.IUS–PA	2.81	1.01	.50**	-.11*	.65**	(.78)

Notes: IUS-IA=Intolerance of Uncertainty Scale Inhibitory Anxiety subscale, IUS-PA=Intolerance of Uncertainty, Scale Prospective Anxiety subscale. Internal consistencies (Cronbach's a) are shown in brackets; **p < .01; *p < .05.

The trait-anxiety have a positive, highly significant correlation, similar with both Intolerance to Uncertainty sub-scales (IUS – IA: r =.49, p < .01; IUS – PA: r =.50, p < .01) and a negative, significant correlation with self-efficacy (r = -.39, p < .01).

On the other hand, self-efficacy has negative, significant correlations, with higher levels of intensity and significance with IUS-IA (r=-.34, p < .01), than with IUS-PA (r=- .11, p < .05). The results are in line with studies shown that neuroticism as meta-factor including the trait-anxiety factor is negatively correlated with self-efficacy (Strobel et. al., 2011) as well as with a meta-analysis studying the relations between personality and self-efficacy as part of performance motivation (Judge & Ilies, 2002). Also, our findings are similar with studies shown positive relationship between trait-anxiety and IUS-12 (Swee et. al., 2018).

Mediation analysis

The results show that anxiety positively predicts IUS – IA (B=.56, SE=.06, p<.001) and perspective anxiety facet (B=.52, SE=.05, p<.001).

Analysing the indirect effects, the results, presented in Tables 2 and 3, shown that self-efficacy significantly mediates the relationship between anxiety and IUS – IA, B=.09, p<.001 (95% *CI*, .035 to .145) and support validating H3a. In the case of the relationship between trait-anxiety and IUS – PA, the results show a mediating effect of self-efficacy so low B=-.04, p<.001 (95% CI, -.077 to -.002) that we consider that the mediation does not take place or is on the limit that the H3b can be validated.

Mediation of the effects of trait-anxiety on IUS-IA through self-efficacy Table 2

									Indirect Effect		
	Path a: TA->SE		Path b: SE->IUS-IA		Path c: TA->IUS-IA (Total Effect)		Path c' TA->IUS-IA (Direct Effect)		Point estimate	95% CI	
Scale	β	P	β	p	β	p	β	p	β	Lower	Upper
TA	-.25	.00	-.34	.00	.64	.00	.56	.00	.09	.035	.149

Note: TA = Trait-Anxiety; SE = Self-Efficacy; IUS-IA=Intolerance of Uncertainty Scale Inhibitory Anxiety subscale. CI = confidence interval; 5,000 bootstrap samples.

Mediation of the effects of trait-anxiety on IUS-PA through self-efficacy Table 3

									Indirect Effect		
	Path a: TA->SE		Path b: SE->IUS-PA		Path c: TA->IUS-PA (Total Effect)		Path c' TA->IUS-PA (Direct Effect)		Point estimate	95% CI	
Scale	β	p	β	p	β	p	β	p	β	Lower	Upper
TA	-.25	.00	.14	.054	.49	.00	.52	.00	-.04	-.077	-.002

Note: TA = Trait-Anxiety; SE = Self-Efficacy; IUS-PA=Intolerance of Uncertainty, Scale Prospective Anxiety subscale. CI = confidence interval; 5,000 bootstrap samples.

Trait-anxiety negatively affect self-efficacy (*B*=-.25 *SE*=.03, p<.001) and self-efficacy, in turn, negatively affects IUS – IA (*B*=-.34, *SE*=.10, *p*<.01). A non-significant relationship was shown between self-efficacy and IUS – PA (*B*=.14, *SE*=.07, *p*=.054).

However, the results also suggest that even after accounting for the mediating role of self-efficacy, the trait-anxiety has an even higher positive impact on intolerance to uncertainty inhibitory anxiety (*B*=.64, *SE*=.06, *p*<.001), self-efficacy accounting for 13.6% of total effect. In the case of the mediating role of self-efficacy in the relationship between the trait-anxiety and intolerance to uncertainty perspective anxiety, the relationship is slightly weakened (*B*=.49, *SE*=.04, *p*<.001), self-efficacy accounting for a -0.07% of total effect. Therefore, we may conclude that H3a was validated, with partial mediation confirmed, but H3b was rather not validated, due to the lowest percentage of variance explained in the intolerance to uncertainty perspective anxiety as accounted for by the self-efficacy and the possibility that the confidence interval to include 0, even if the upper limit of the interval was, in fact -.0017 (reported in the table above as -.002).

6. Discussion

This study was conducted to examine the impact of trait-anxiety on both facets of intolerance of uncertainty during the COVID-19 pandemic as mediated by self-efficacy. It was hypothesised that trait-anxiety will positively predict both intolerance of uncertainty, inhibitory and prospective anxiety. Additionally, it was shown that self-efficacy will mediate the relationship between trait-anxiety and intolerance of uncertainty inhibitory anxiety (IUS-IA) and the relationship between trait-anxiety and intolerance of uncertainty prospective anxiety (IUS-PA) will rather not be mediated by self-efficacy.

Our results are in line with the studies that are mentioning statistically significant relationships between anxiety and self-efficacy, anxiety – IUS, self-efficacy and worry. Still, surprising for us was to acknowledged that being prone to experience anxiety states as a person with high levels of trait-anxiety is, one can have a "negative problem orientation" (McEvoy & Mahoney, 2012). On top of it, not only experiencing the anxiety, but also the current pandemic context, are both associated with the belief that problems are threatening, which decrease the problem-solving confidence and increases the intensity of worry. There are authors that explain how from experiencing anxiety one is led to "cognitive avoidance, whereby the individual is motivated to engage in unhelpful strategies such as thought suppression, distraction, and thought replacement" (Behar et al., 2009). We showed in other study conducted since the COVID-19 pandemic started that from the emotional coping strategies, acceptance and restraint occur when a person realize that the stressor is real and are rather spontaneous reactions to the unknown nature of the stressor. Therefore, either restrain oneself from doing anything too quickly until one gathers more information to react, or, simply accept the reality of the fact that it happened (Țânculescu-Popa, 2021), the reaction is rather of a blocked, non-actionable nature.

Therefore, as the results of the current study indicates, irrespective that the correlations are negative, statistically significant, between self-efficacy and IUS-IA (*r* = -

.34, p <.01) and self-efficacy and IUS-PA (*r* = -.11, p <.05), it proves that the total effect of trait-anxiety on IUS-IA through self-efficacy (path c') is even greater in intensity that the initial direct effect (path c), which, somehow is counterintuitive. Still, it is not if we consider that.

Therefore, in the short term, the strategies might be negatively reinforced by a reduction in worrisome thoughts and anxiety, but also to prevent underlying threat appraisals from being modified, which ultimately results in more worrisome thoughts (Behar et al., 2009).

In the second mediation case, the self-efficacy is at the limit to be called mediating the relationship between trait-anxiety and IUS-PA. We can explain this result by the fact that "predictive factors are usually related, probabilistically (…) to future events (…) that creates some degree of uncertainty" (Bandura, 1997, p.117). In other words, self-efficacy which is mainly about acting in an efficacy manner, is blocked because of the context and function as auto motivator under the form of negative discrepancy meant to reduce the cognitive congruity. Piaget (1960) explains the discrepancies between the cognitive schemata people already possess (in the case of our study, trait-anxiety) and perceived events (in the case of our study, all the behaviours related to IUS) "create internal conflict that motivates exploration of the source discrepancy until the internal schemata are altered to accommodate the contradictory information."

7. Conclusions

In light of the objectives of this study, is it more plausible to have some conclusions that are drawn in the COVID-19 pandemic context and are somehow counterintuitive. Self-efficacy only functions as partial mediating the relationship between trait anxiety and the intolerance of uncertainty, inhibitory anxiety, mainly, we found, because self-efficacy is about acting and acting now, whereas perspective anxiety, is mainly connoted as a state of fright. This is most probably why the self-efficacy is blocked and could be seen as an impossibility of the individual to control the environment that could be also seen as "highly disconcerting".

We need to admit that the main limitation of the study is the transversal design, data being collected at one single moment in time, in the beginning of the COVID-19 pandemic which, on one side, don't allow us to draw causal inferences and, one the other side, not to have a point of reference in time. This could very well be a future path to be taken.

An important conclusion in light of the current study is that people could seek to employ more the reinterpretation coping strategy, meaning that, when facing the unknown, unexpected event or information, "to change hazardous environments into more benign ones" (Bandura, 1997, p.141).

Lastly, but not less important, we need to look to concepts connoted as positive, like self-efficacy, with the reserve of the context, because as skilful, educated or gifted person one is, a crisis context like the one we face currently, could change the entire manifestation of a concept consecrated as doing its job whenever inferred.

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