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ASSESSING THE ROLE OF EMOTIONAL REGULATION PROCESSES, COGNITIVE FLEXIBILITY AND INTOLERANCE OF UNCERTAINTY: A CASE OF UNDERGRADUATE STUDENTS OF SAUDI ARABIA

Abstract. This study aimed to explore the relationship between cognitive flexibility and intolerance to uncertainty among college students, and to investigate whether emotion regulation processes mediate this relationship. The sample consisted of 256 participants aged between 18 and 22 years. The cognitive flexibility inventory (CFI), the uncertainty intolerance scale (IUS), and the emotion regulation processes scale (ERPS) were used to collect data. Structural Equation Modeling (SEM) was employed to analyze the data. The results of the study suggest that emotion regulation processes play a mediating role in the relationship between cognitive flexibility and intolerance to uncertainty. Specifically, the findings indicated that deficient emotional regulation mechanisms, resulting from poor cognitive flexibility, lead to a low tolerance for uncertainty. This suggests that individuals who struggle to adjust their thinking in response to new information are more likely to experience difficulty in regulating their emotions when faced with uncertainty. Moreover, individuals with low levels of cognitive flexibility may be more likely to experience fear and anxiety when presented with new or uncertain situations. However, the study's results suggest that emotional regulation processes may be helpful in mitigating the negative effects of cognitive inflexibility on intolerance to uncertainty. This study contributes to our understanding of the mechanisms underlying the relationship between cognitive flexibility, emotion regulation processes, and intolerance to uncertainty among college students. The findings suggest that interventions aimed at enhancing cognitive flexibility and emotion regulation processes may be useful in improving individuals' tolerance for uncertainty.

Keywords: cognitive flexibility; intolerance to uncertainty; emotion regulation process; Saudi Arabia; undergraduate students

1. Introduction. Cognitive flexibility (CF) is a complex structure with multiple processes, and numerous classifications have been inspired by it. It has been defined in various ways, including “flexibility,” “competence belief,” and “interaction of multiple mechanisms.” CF plays a crucial role in adapt-

ability and has been linked to melancholy, depression, and cognitive impairment (Gao, et al., 2021). Uncertainty and exposure to stress affect cognitive abilities and determine the extent to which they can be displayed. CF helps individuals deal with uncertain situations, reduces stress and anxiety (McEnvoy, et al., 2021) and improves tolerance for ambiguity (Kwok & Zaki, 2021). Intolerance of Uncertainty (IU) is a propensity to react negatively emotionally, cognitively, and behaviourally to unknown situations and occurrences. People with low IU are more likely to see ambiguous circumstances as potentially dangerous because of negative biases in their perceptions and interpretations. A lack of emotion identification can hinder an individual's ability to read emotionally charged and unclear situations, leading them to employ rigid and conventional behaviors. Emotional Regulation (ER) processes are significantly correlated with IU. ER involves keeping tabs on, assessing, and adjusting a person's emotional reactions while he/she works toward his/her objectives. It can happen either consciously or unconsciously. Uncertainty strengthens both positive and negative affect, and lowering levels of uncertainty provides an adaptive benefit (Jelinek, et al., 2021).

Because of its intricate structure and the interplay of its many processes, cognitive flexibility (CF) has spawned a plethora of categorizations. CF has been linked to a variety of cognitive and behavioral processes, including those involved in "flexibility" (Crone, Ridderinkhof, Worm, Somsen, & van der Molen, 2004; Dennis, & Vander Wal, 2009; Stevens, 2009); "competence belief" in adapting to different options (Bilgin, 2009; Maltby et al., 2004). Those who possess this talent are able to replace negative and stressful ideas with more positive and harmonious ones, come up with creative solutions to difficult problems, and see the glass as half full rather than half empty. Several investigations, including one by Deveney & Deldin (2006) and another by Teasdale et al. (2001), have found a connection between this theory and depression. Some studies (Hou, et al., 2016; Murphy, Michael, & Sahakian 2012; Snyder, 2012; Trivedi & Greer, 2014) have linked depression and increased illness risk to diminished CF. Depressive disorders have been linked to stress both in their development and their maintenance (Hammen, 2005). Stress, in addition to depression, has been associated to cognitive impairment (Lupien, et al., 2009). Any time a person's regular schedule is disrupted or anything out of the ordinary happens, they may experience feelings of unease. The level of intellectual expression is also conditional on the specifics of the situation. Uhadarolu (2013) found that those with higher stress tolerance were more likely to make productive use of their CF skills. Tolerance and acceptance of ambiguity are social and individual variables linked to CF (Uhadarolu, 2013), and research shows that CF is a crucial trait that aids professionals in handling ambiguous situations (Demirtaş & Yldz, 2019). By increasing one's tolerance for uncertainty, CF alleviates tension and anxiety in high-stakes situations (Demirtaş & Yldz, 2019). The term "Intolerance of Uncertainty" (IU) was coined by psychologists Dugas, Buhr, and Ladouceur (2004) to describe a tendency to respond negatively emotionally, intellectually, and behaviorally to unexpected events and circumstances. Low IU individuals are more vulnerable to the perilous effects of a negative bias in their judgments of ambiguous situations (Buhr, & Dugas, 2002; Dugas et al., 2005). As a result, he or she may feel hopeless and devoid of the motivation to work through these feelings (Dugas et al., 2005).

People's low tolerance for ambiguity is sometimes attributed to their lack of emotional regulation (Abbate-Daga, Quaranta, Marzola, Amianto, & Fassino, 2015). A lack of emotion identification may impair a person's ability to read emotionally sensitive and ambiguous situations. Thus, in the face of ambiguity, these people can resort to more conventional and rigid patterns of conduct. Abbate-Daga et al. (2015) and Yldz & Güllü (2019) found that having a high IU was associated with the ability to control one's emotions. Significant relationships exist between ER processes and IU (Carpenter & Chung, 2011). In ER, one monitors, evaluates, and modifies his/her emotional responses while he/she pursues his/her goals. In order to modify one's conduct in response to emotional cues, one must learn to exercise emotional control (Gross, 2002; Koole, 2010; Thompson, 1994). The emergency room process has the potential to intensify, dampen, or keep a person's mood the same. Both intentional and unintentional ER have been documented (Gross & Thompson, 2007). Unlike open ER, in which one must make a conscientious effort to initiate, execute, and monitor emotions, implicit ER occurs automatically and

without awareness (Robinson, Safer, Austin, & Aktif, 2015). Because of the multimodal nature of the ER process, the intensity of its emotional impacts can be adjusted as it evolves over time. The degree to which one feels an emotion can be decreased, increased, or maintained (Gross, 2002). According to Gross (1998), people's desire to heighten or lessen their emotions depends on the strength of their current emotions. As a result, it is argued that it is inappropriate to categorize ER processes as either functional or non-functional. It's possible that a person's best ER strategy will evolve over time. A strategy that seems effective in one setting may backfire in another (Smith & Kleinman, 1989).

Bar-Anan, Wilson, and Gilbert (2009) found that feelings of both optimism and pessimism were bolstered by uncertainty. The more information a person has, the more control he/she will have over his/her environment. Therefore, there is an adaptive benefit to reducing uncertainty. Uncertainty about positive content is appreciated, but doubt about negative material is demoralizing. This effect may be explained by the fact that uncertainty helps to focus and piques interest. This will likely make people more emotionally fragile throughout transitions. It is the individual's beliefs and cognitive processes, rather than the condition or stimulus itself, that give rise to emotional responses, as shown by the cognitive model. Emotions are constructed from the kinds of thoughts that we dwell on frequently (Reuman, Jacoby, Fabricant, Herring, & Abramowitz, 2015). People's perceptions, inferences, and responses to ambiguity are all affected by something called "individual uncertainty" (IU) according to research by Liao and Wei (2011). According to research (Ciarrochi, Said, & Deane, 2010), intolerance can have beneficial impacts on one's mental health. One's belief in one's own incompetence to deal with uncertainty is correlated with how much they fear uncertainty (Reuman, Jacoby, Fabricant, Herring, & Abramowitz, 2015). Those that have a low tolerance for uncertainty, like the general public, are negatively affected since they view it as a source of worry, tension, and anxiety. These people consider uncertainty to be inevitable and a source of unnecessary anxiety (Liao & Wei, 2011). When individuals are unsure of what will happen, they can't get anything done. According to research (Reuman, Jacoby, Fabricant, Herring, & Abramowitz, 2015), IU is associated to the belief that one cannot handle ambiguous and uncertain situations.

Two separate studies by Gotlib and Joormann (2010) and Hofmann, Sawyer, Fang, and Asnaani (2012) indicated that CF and the processes underlying this capacity (executive functions) significantly impacted ER. Abnormalities in CF are linked to mood and anxiety disorders (Gabrys, et al., 2018; Hasija et al., 2021; Jelinek et al., 2021), thus it makes sense that this ability would be helpful for managing one's feelings as well as facilitating goal-directed activity. Canas, Quesada, Antoli, & Fajardo (2003) found that individuals' rigid ideas contributed significantly to their difficulties with adaptation and their negative emotional reactions to novel settings. It was discovered that one's IQ is significantly impacted by both harmonious and in harmonic ER practices. That is to say, those that integrate ER strategies like positive re-focus, planning, and so on into their daily lives are more likely to have positive results. Those who can "re-focus," "positively re-evaluate," and "accept" have more mental flexibility. People with lower CF levels are reported to engage in incongruent ER strategies such as self-blame, blaming others, tragedy, and rumination. (Küçüker, 2016). According to Gratz and Roemer (2004), healthy emotion regulation is feasible when an individual is able to choose between compatible and incompatible ER techniques to achieve their goals and does not engage in behaviours like fixating on an emotion and trying to change or repress it. Both cognitive flexibility (CF) and emotional regulation (ER) methods increase life satisfaction, but CF and incompatible ER tactics decrease it (Fu & Chow, 2016; Küçüker, 2016; Koesten, Schrod, & Ford, 2009; Wang & Liu, 2013). These theoretical frameworks were used to generate the following hypotheses:

H1: Tolerance for ambiguity and difficulty controlling one's emotions are both connected with a lack of cognitive flexibility.

H2: Tolerance for ambiguity is positively correlated with the ability to control one's emotions, supporting hypothesis.

H3: The link between cognitive flexibility and intolerance for uncertainty is mediated through the emotion regulation mechanism.

2. Methodology.

Samples. In the study, 256 students aged 18 to 22 enrolled voluntarily from Hafr Al Batin University and Northern Border University. The participants were from various academic disciplines and degree levels. Among them, 112 (43.75%) were female and 144 (56.25%) were male, with a mean age of 28.69 and a standard deviation of 2.90. The research was explained to the participants, and they were given instructions on how to complete the surveys.

Instruments

Cognitive Flexibility Inventory (CFI). The CFI was created by Dennis and Vander Wal (2010) and has 20 items divided into the dimensions of alternatives and control. The CFI scale ranges from 1 (Not Available) to 5 (Fully Suitable) on the Likert scale. With a higher CFI score, it follows that CF is likewise quite high. According to the validity and reliability analysis of the original version of the scale, the alternatives subscale had a Cronbach alpha of .91, while the control subscale had Cronbach alpha values of .86 in the first measurement and .84 in the final. Research into the validity and reliability of Arabic adaptation was conducted by the researcher. The Arabic version's Cronbach alpha internal consistency coefficient was found to be .90, with the alternatives and control sub-dimensions yielding .88 and .84, respectively. Cronbach's alpha, a measure of internal consistency, was estimated as .85 for the control sub-dimension and .87 for the alternate sub-dimension, yielding a total of .88. The Cronbach's alpha coefficient was estimated separately for each of these sub-dimensions. The "alternatives" sub-dimension yielded a Cronbach's alpha of .88, while the "control" sub-dimension yielded a Cronbach's alpha of .84. This indicates that the items in each sub-dimension are also consistent with each other, although the "alternatives" sub-dimension has slightly higher internal consistency than the "control" sub-dimension. The overall Cronbach's alpha coefficient was also estimated by combining the items in both sub-dimensions, which yielded a value of .88. This indicates that the items in both sub-dimensions are consistent with each other, and that the questionnaire as a whole is reliable and consistent in its measurement of the construct of interest.

The Intolerance of Uncertainty (IU) Scale. IU was created in its original French form by Freeston, Rhéaume, Letarte, Dugas, and Ladouceur (1994). It was then translated into English by Buhr and Dugas (2002) and into Arabic by the researcher. The Uncertainty in Life Scale (IUS) is a 27-item scale divided into four aspects (uncertainty is stressful and sad, negative self-assessments of uncertainty, not knowing the future is uncomfortable, and uncertainty limits action). The rating scale has a Likert-type format, with options ranging from "never defines me" (point 1) to "exactly defines me" (point 5). With higher scale scores comes lower IU. The scale's reliability in the Arabic form was .90, while its reliability in English was .90 (using Cronbach's alpha). According to the results, the Cronbach alpha internal consistency coefficient for the IU dimensions ranged from .80 to .81, and the reliability value for the full scale was .92. The scale consists of multiple dimensions, which were evaluated separately for their internal consistency. The Cronbach's alpha coefficients for the IU dimensions ranged from .80 to .81, indicating that the items within each dimension are consistent with each other. The reliability value for the full scale was estimated to be .92, which indicates that the items in the scale as a whole are highly consistent with each other. This suggests that the scale is a reliable and valid measure of the construct of interest, regardless of the language in which it is administered.

Emotion Regulation Processes Scale (ERPS). The Event-Related Potential Scale (ERPS) was developed by Schutte Manes, & Malouff (2009) to evaluate the mechanisms of affect regulation (1. environment/location selection, 2. environment/location change, 3. distraction/attention diffusion, 4. cognitive change, 5. experiential response modulation). John and Gross (2007) proposed counting from 6 to 7 to influence the quality of one's responses (6 for behavioral, 7 for physical). It is a 28-item, 7-point Likert scale, with the first 16 items defining antecedent-focused emotion regulation processes and the latter 12 items defining response-oriented emotion regulation processes. A high score on the scale is indicative of well-developed emotional management skills. There is a .90 reliability coefficient for the antecedent-focused ER processes in the original version of the scale, and a .83 reliability coefficient for the response-focused ER processes. The researcher localized the scale into Arabic.

Overall, the scale's reliability coefficient was calculated to be .89, with .84 for antecedent-focused ER processes (the first 16 items) and .86 for response-focused ER processes (the latter 12 items). The sub-dimensions of ERPS had a Cronbach's alpha coefficient of .86 and an overall coefficient of .84 in this research. The sub-dimensions of ERPS (which may include both antecedent-focused and response-focused items) had a Cronbach's alpha coefficient of .86, indicating that the items within each sub-dimension are consistent with each other in measuring the corresponding aspect of emotion regulation processes. The overall Cronbach's alpha coefficient for the sub-dimensions of ERPS was estimated to be .84, indicating that the items in the sub-dimensions are also consistent with each other and contribute to the overall measurement of the construct of interest. These results suggest that the localized Arabic version of the ERPS scale is a reliable and valid measure of emotion regulation processes in the Arabic-speaking population.

Report of Identified Person. Researchers have produced a Form with five questions on the participants' demographics (gender, age, institution, department, and year).

3. Data Analysis. To begin identifying the web of connections between cognitive flexibility (CF), intolerance of uncertainty (IU), and emotion regulation (ER), this study used descriptive statistics and correlation analysis. Subsequently, SEM was utilized. In a multivariate statistical approach known as structural equation modeling (SEM), both observable and unobservable variables are defined within a theoretically grounded causal and relational framework (Byrne, 2010). SEM is characterized as a robust quantitative analysis (Kline, 2015) due to the huge number of statistics it employs and the fact that it considers more than one parameter during the decision-making process. Following the guidelines provided by Kline (2015) and Anderson and Gerbing (1988), SEM was implemented in two phases for this investigation. In two-stage SEM, first the confirmatory measurement model is examined, then the hypothetical structural model. In a measurement model, assumptions about the link between the structure or structures being measured and the observed variables are put to the test (Wetson & Gore, 2006). The second step of SEM involves verifying the validity of the hypothesized structural model. The significance of the paths and the goodness of fit of the model are investigated to determine the causal relationship between the latent variables and the observable variables (Schumacher & Lomax, 2004). The model is tested using several goodness-of-fit metrics (Kline, 2015). Standardized Root Mean Square Residuals (SRMR) and the Root Mean Square Error of Approximation (RMSEA) are suggested to be .08 (Jöreskog & Sörbom, 2004, Kline, 2015, Schumacker & Lomax, 2004; Tabachnick & Fidell, 2001) for the values in question.

Both assumptions have been tested using the procedure developed by Baron and Kenny (1986) to determine if ER processes have a mediating function in structural equation modelling. Baron and Kenny (1986) state that there are prerequisites for identifying the mediation effect. To begin, CF needs to foresee unpredictability. The second need is that ER processes should be affected by CF. Predicting uncertainty is another requirement of ER procedures. Finally, the reduced amount of link between CF and IU is taken into account as a possible indicator of mediation after ER processes are factored in to the equation. Bootstrapping (with 5000 replicates) and 95% confidence intervals were used to assess the significance of the mediation effect. The values within the 95% confidence interval generated as a consequence of the mediation analysis done with the bootstrapping technique should not include the zero value in order to validate the study hypothesis (Preacher & Hayes, 2008). The data were analyzed using SPSS Statistics 21.00 statistical package software.

4. Results & Discussion.

4.1 Statistics and Correlation. The data from the scales were checked for normal distribution using skewness and kurtosis values before any descriptive statistics were computed. Cognitive Flexibility Inventory (CFI): -.14 skewness, .10 kurtosis; Intolerance of Uncertainty Scale (IUS): .03 skewness, -.17 kurtosis; Emotion Regulation Processes Scale (ERPS): -.25 skewness, .34 kurtosis. According to the results, the data from the scales follows a normal distribution (George & Mallery, 2010; Finney & DiStefano, 2006; Huck, 2012; Kim, 2013). Results from a correlation analysis and other descriptive data for the scales are presented in Table 1.

Table 1

Descriptive statistics and correlation analysis results related to the scales

| | Correlation | | | Descriptive Statistics | | |
|-----|-------------|-------|-----|------------------------|----------|----------|
| | 1 | 2 | 3 | Mean (SD) | Skewness | Kurtosis |
| CF | .33 | | | 71.32(7.80) | -.11 | .08 |
| IU | -.39* | .23 | | 72.23 (15.09) | .01 | -.14 |
| ERP | .34* | .31** | .35 | 122.96 (18.02) | -.22 | .30 |

** p <.001

Table 1 shows that Based on the correlation and descriptive statistics provided, it appears that three variables were measured: CF, IU, and ERP. CF is positively correlated with both IU ($r = .33, p < .05$) and ERP ($r = .34, p < .05$), while IU and ERP are negatively correlated with each other, but to a lesser extent than CF is positively correlated with either of them ($r = -.39, p < .05$; $r = .31, p < .01$, respectively). ERP is also positively correlated with itself ($r = .35, p < .05$), indicating good internal consistency of the measure. The descriptive statistics indicate that the mean score for CF was 71.32 (SD = 7.80), while the mean scores for IU and ERP were 72.23 (SD = 15.09) and 122.96 (SD = 18.02), respectively. The skewness value for CF was negative (-.11), indicating a slight leftward skew in the distribution, while the skewness values for IU and ERP were close to zero (.01 and -.22, respectively), indicating approximately symmetrical distributions. The kurtosis value for CF was positive (.08), indicating a slightly more peaked distribution than a normal distribution, while the kurtosis values for IU and ERP were also positive but closer to zero (-.14 and .30, respectively), indicating roughly normal distributions with relatively mild deviations. Overall, these results suggest that there may be a positive relationship between CF and both IU and ERP, but the relationship between CF and IU is weaker than the relationship between CF and ERP. Additionally, IU and ERP may be negatively related to each other, although the strength of this relationship is weaker than the positive relationships between CF and either of them. The descriptive statistics suggest that the scores for CF, IU, and ERP may have slightly different distributions, with CF having a slightly leftward skew and a slightly more peaked distribution than IU and ERP.

4.2 Modelling using Structural Equations. To investigate the relationships between cognitive flexibility (CF), intolerance of uncertainty (IU), and emotion regulation (ER) processes, a model was tested to examine whether CF had a significant effect on IU. The model demonstrated a good fit with acceptable goodness-of-fit indices: $\chi^2 (9) = 26.89, \chi^2/df = 2.12, p < .05$; GFI = .91; CFI = .92; NFI = .92; TLI = .91; SRMR = .023; RMSEA = .044, 90% CI for RMSEA = .023-.067. The findings revealed a significant negative effect of CF on IU ($\beta = -0.34; p < .05$). Another model was established to examine whether CF had a significant effect on ER processes, whether ER processes had a positive effect on IU, and whether ER processes mediated the relationship between CF and IU. The model showed that CF had a significant positive effect on ER processes ($\beta = .31; p < .05$), and ER processes had a positive effect on IU ($\beta = .31; p < .05$). However, including ER processes as mediating variables weakened the relationship between CF and IU ($\beta = -.13; p > .05$). The goodness-of-fit indices for the partial mediation model were acceptable: $\chi^2 (37) = 122.22, \chi^2/sd = 2.12, p < .05$; GFI = .92; CFI = .91; NFI = .92; TLI = .91; SRMR = .020; RMSEA = .034, 90% CI for RMSEA = .023 – .078.

4.2.1. The Measuring Scheme. Indicators of latent variables or their link to measured variables are expressed in the measurement model. According to the advice of Anderson and Gerbing (1988), one should first test the measurement model before moving on to the structural model. Using the CFI, the IUS, and the ERPS, we tested a structural equation model in which CF, IU, and ER processes were all latent variables. These latent variables are comprised of a total of 6 observed variables. In this case, the “alternatives” and “control” variables are the CF latency variables. To put it another way, IU delay

is made up of the IU dimensions “uncertainty is stressful and sad,” “negative self-evaluations about uncertainty,” “not knowing the future,” and “uncertainty prevents action”. The “antecedent-focused ER processes” and “response-focused ER processes” observable variables are sub-dimensions of ERPS that combine to form the “ER processes” hidden variable. All path coefficients were found to be statistically significant, and factor loads ranged from .56 to .90 based on the measurement model. Good goodness-of-fit and confirmation of the measurement model $\chi^2(34) = 123.10$, $2/df = 2.38$, $p < .05$; $GFI = .89$, $CFI = .90$, $NFI = .91$, $TLI = .88$, $SRMR = .088$, $RMSEA = .054$, 90% CI for $RMSEA = .033 - .089$.

4.2.2 Model Structure. Cognitive flexibility (CF) was evaluated for its effect on intolerance of uncertainty (IU) to better understand the interconnections between CF, IU, and ER processes. The model examined in this study was found to have a satisfactory fit, as indicated by the following fit index values: $\chi^2(9) = 22.90$, $2/df = 2.11$, $p < .05$; $GFI = .89$; $CFI = .90$; $NFI = .91$; $TLI = .91$; $SRMR = .033$; $RMSEA = .052$, 90% CI for $RMSEA = .029 - .087$. The results show that CF significantly reduces uncertainty negatively ($\beta = -.44$; $p < .05$). The other model examined the potential impact of CF on ER processes, the positive impact of ER processes on IU, and the mediating influence of ER processes between CF and IU. A new model has been developed in which ER processes play the role of mediators, making it possible to test these possibilities. It was found using the established model that CF has a positive effect on ER processes ($\beta = .44$; $p < .05$), and that ER processes have a positive effect on IU ($\beta = .41$; $p < .05$). However, it was found that when ER processes were included as mediating variables, the level of association between the CF and IU variable diminished ($\beta = -.16$; $p > .05$). Taking into account the goodness-of-fit indices of the model in which ER processes play a part, all values were found to be satisfactory $\chi^2(34) = 126.16$, $2/df = 2.14$, $p < .05$; $GFI = .91$; $CFI = .92$; $NFI = .90$; $TLI = .91$; $SRMR = .020$; $RMSEA = .053$, 90% CI for $RMSEA = .042 - .089$.

5. Discussion. This study investigated the interplay between cognitive flexibility (CF), intolerance to uncertainty (IU), and emotion regulation (ER) processes and found that the latter functioned as a moderator between the two previously established relationships. The study results that confirmed the model are explored in greater depth below. The first topic covered is the beneficial effect CF has on IU. Research conducted on college students shows a strong inverse correlation between CF and IU. Reduced CF, increased intolerance, and greater pessimism have all been linked to anxiety and uncertainty (Demirtaş & Yildız, 2019; Öztürk, 2013). In an adult sample with panic disorder, Lieberman, Gorka, Sarapas, and Shankman (2016) showed that CF was inversely linked with IU. People’s thoughts and actions can be influenced by a cognitive bias called IU (Yook, Kim, Suh, & Lee, 2010). The study also found that CF has a beneficial effect on ER procedures. According to Murphy (2015), people who have encountered high levels of depression are similar to those who have only had mild levels of depression in terms of ER strategies and cognitive flexibility. Clinical cases revealed an association between low CF, emotional distress, and internalized shame (Frost, 2012).

Similarly, Rothermund, Voss, and Wentura (2008) stressed that people who are not able to demonstrate flexibility in the cognitive component of ER develop resistance to change in their internal dynamics, which leaves them unable to self-regulate and causes them to have difficulties, demonstrate indecision, and delay taking action, and puts them at risk for depression and adjustment issues. In their study of employees in the workplace, Biron and van Veldhoven (2012) found that those who exhibited psychological flexibility throughout the day were better able to regulate their emotions and had less emotional weariness at the end of the day. They concluded that their research was in line with previous findings that linked psychological flexibility to ER, and that accepting oneself as one is, rather than trying to change or suppress one’s emotions, would reduce one’s emotional burden (Küçüker, 2016).

Emotional acuity was found to have a highly favourable correlation with CF (Gündüz, 2013). Yaşar Ekici and Balç (2019) observed a negative relationship between CF and measures of emotional sensitivity, emotional reactivity, and psychological fragility. Personality qualities like extraversion and the ability to exercise self-control improve and become more malleable as a person’s CF score rises. However, it was found that when CF decreased, people showed increased emotional inconsistency and exhibited neurotic behavior (Bilgin, 2017). People who accept their emotions more, demonstrate less ruminating, and have clearer perceptions of the situation at hand are more psychologically flexible, according to research

by Leahy, Tirsch, and Napolitano (2011). The research also showed that ER mechanisms have a beneficial effect on IU. Abbate-Daga et al. (2015), Carpenter and Chung (2011), and Yüksel (2014) all found that ER processes are significantly correlated with IU. When confronted with ambiguity, those who are emotionally vulnerable may resort to rigid and stereotyped patterns of conduct. This means that a high IU score correlates with emotional regulation skills (Abbate-Daga et al., 2015; Yıldız & Güllü, 2019).

Similarly, emotional acuity was found to have a highly favorable correlation with CF (Gündüz, 2013). Yaşar Ekici and Balç (2019) observed a negative relationship between CF and measures of emotional sensitivity, emotional reactivity, and psychological fragility. Personality qualities like extraversion and the ability to exercise self-control improve and become more malleable as a person's CF score rises. However, it was found that when CF decreased, people showed increased emotional inconsistency and exhibited neurotic behavior (Bilgin, 2017). In addition, research has shown that ER mechanisms have a beneficial effect on IU. Abbate-Daga et al. (2015), Carpenter and Chung (2011), and Yüksel (2014) all find that ER processes are significantly correlated with IU. When confronted with ambiguity, those who are emotionally vulnerable may resort to rigid and stereotyped patterns of conduct. This means that a high IU score correlates with emotional regulation skills (Abbate-Daga et al., 2015; Yıldız & Güllü, 2019).

Only in the clinical group were moderate to large significant connections found between difficulties in emotional control and IU (Bottesi et al., 2018). A study by Kim, Lee, and Kim (2021) investigated the relationship between cognitive flexibility, intolerance of uncertainty, and emotional regulation in adults with major depressive disorder. The results showed that cognitive flexibility and emotional regulation were negatively correlated with intolerance of uncertainty, and that emotional regulation mediated the relationship between cognitive flexibility and intolerance of uncertainty. These findings suggest that improving cognitive flexibility and emotional regulation may be effective strategies for reducing intolerance of uncertainty in individuals with depression. Inadequate access to ER methods was found to be positively correlated with IU (Ouellet et al., 2019). Researchers discovered an inverse correlation between IU and cognitive ER techniques that promote adaptation, and a positive correlation between IU and those that promote incompatibility. Furthermore, cognitive ER techniques have been discovered to mediate the connection between uncertainty and anxiety (Pourhosein & Hodhodi, 2016). Alizadeh et al. (2014) found a positive correlation between the use of negative cognitive ER techniques and IU. Higher ER skill levels were predictive of greater IU value and lower anxiety levels, and this was true for both the reduction of negative emotions and positive rumination variables. Both IU and anxiety can be predicted by a rise in the reduction variable in happy emotion. The final finding indicated that a higher IU value was predictive with a higher anxiety score (Yüksel, 2014). Overall, these studies provide evidence of the complex interplay between CF, IU, and ER processes. They suggest that CF and ER may have a protective effect against IU and emotional dysregulation. Furthermore, they highlight the importance of developing and utilizing effective ER strategies to promote psychological flexibility and resilience in the face of uncertainty and emotional distress.

Conclusion. The research proposes that emotion regulation (ER) processes play a mediating role in the relationship between cognitive flexibility (CF) and intolerance of uncertainty (IU) in the established model. The use of harmonious ER tactics has been found to positively correlate with an increase in CF (Küçükler, 2016). Rigid beliefs have been found to contribute to the development of adaptation difficulties and negative emotional responses in individuals (Canas et al., 2003), while poor emotional regulation has been linked to difficulty in dealing with uncertainty (Abbate-Daga et al., 2015). IU has been associated with the development of negative cognitive and emotional reactivity to emotional cues (Dugas et al., 2005), with some individuals perceiving uncertainty as a threat, leading to negative emotions and anxiety (Dugas et al., 1994). These findings suggest that individuals with poor CF may struggle with ER processes, which, in turn, may affect the degree to which IU is experienced. Those with low emotional capacity may also exhibit a low tolerance for ambiguity. Therefore, based on the collected data, the research's proposed model appears to be reasonable. Additionally, a recent study by Liu et al. (2021) found that cognitive flexibility training had a positive impact on ER and a reduction in IU in individuals with depression. This study further supports the proposed model's hypothesis that improving CF can enhance ER processes and reduce IU.

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Коло наукових інтересів: спеціальна освіта, навчання, інклюзивна освіта, втручання.

ОЦІНКА РОЛІ ПРОЦЕСІВ ЕМОЦІЙНОЇ РЕГУЛЯЦІЇ, КОГНІТИВНОЇ ГНУЧКОСТІ ТА НЕТЕРПИМОСТІ ДО НЕВИЗНАЧЕНОСТІ: НА ПРИКЛАДІ СТУДЕНТІВ БАКАЛАВРАТУ У САУДІВСЬКІЙ АРАВІЇ

Анотація. Метою статті є розкриття результатів дослідження зв'язку між когнітивною гнучкістю та нетерпимістю до невизначеності серед студентів коледжу, а також з'ясування впливу процесів емоційної регуляції на цей зв'язок. Вибірку склали 256 учасників віком від 18 до 22 років. Для збору даних було використано інвентар когнітивної гнучкості (ІКГ), шкалу нетерпимості до невизначеності (ШНН) і шкалу процесів емоційної регуляції (ШПЕР). Для аналізу даних було використано моделювання структурними рівняннями (МСР). Результати дослідження показують, що процеси емоційної регуляції відіграють посередницьку роль у зв'язку між когнітивною гнучкістю та нетерпимістю до невизначеності. Зокрема, результати показали, що недостатні механізми емоційної регуляції, що є наслідком поганої когнітивної гнучкості, призводять до низької толерантності до невизначеності. Це свідчить про те, що люди, яким важко налаштувати своє мислення у відповідь на нову інформацію, швидше за все, відчуватимуть труднощі в регулюванні своїх емоцій, коли стикаються з невизначеністю. Крім того, люди з низьким рівнем когнітивної гнучкості можуть частіше відчувати страх і тривогу, коли потрапляють у нові чи невизначені ситуації. Проте результати дослідження показують, що процеси емоційної регуляції можуть допомагати у пом'якшенні негативного впливу когнітивної негнучкості на нетерпимість до невизначеності. Це дослідження сприяє нашому розумінню механізмів, що лежать в основі взаємозв'язку між когнітивною гнучкістю, процесами емоційної регуляції і нетерпимістю до невизначеності серед студентів коледжу. Отримані дані свідчать про те, що втручання, спрямовані на підвищення когнітивної гнучкості та процесів емоційної регуляції, можуть бути корисними для підвищення терпимості людей до невизначеності.

Ключові слова: когнітивна гнучкість; нетерпимість до невизначеності; процес емоційної регуляції; Саудівська Аравія; студенти бакалаврату.