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Regulatory Focus, Mental Imagery Vividness, and Career Choice among Undergraduate Students in Abidjan

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Abstract: This study aims to identify the role of mental imagery vividness in the relationship between regulatory focus and career choice among undergraduate students. 205 students enrolled in communication and business administration at the University Institute of Abidjan, with an average age of 21, completed questionnaires on regulatory focus (Higgins et al., 2001), vividness of mental imagery (Jankowska & Karwowski, 2022), and career choice based on Tovi (2022). The results indicate that regulatory focus has a nearly significant influence on vividness of mental imagery ($P = 0.062$). Vividness of mental imagery is not a mediating variable. These results, explained by regulatory and bio-informational congruence theories, suggest that these students are able to align their motivational orientation and vividness of imagery with changes in the economic environment.

Keywords: Regulatory focus; vividness of mental imagery; regulatory congruence; career choice; students

1. Introduction

Today, there is still a growing and worrying number of candidates for competitive examinations organized in our African states, particularly in Côte d'Ivoire (Tovi, 2022 a). However, some graduates are choosing not to take these exams and are instead embarking on entrepreneurial ventures. This intriguing career choice has prompted many explanations. For example, a body of research finds that individuals who use mental imagery more are more likely to opt for entrepreneurship than those who use it less (Nathan & Hill, 2012; Septania & Syah, 2020; Tovi, in press). Mental imagery is defined in

terms of the representation and experience of sensory information without direct external stimuli (Nanay, 2023; Pearson et al., 2015). As for Kosslyn et al. (2001), they propose that "mental imagery occurs when perceptual information is accessible from memory, giving rise to the experience of 'seeing with the mind's eye,' 'hearing with the mind's ear,' " (p. 635). Richardson (1969) refers to any quasi-sensory or quasi-perceptual experience (i.e., any figurative representation of sensory or perceptual states) that we may be aware of and that develops in the absence of the stimulation conditions known to produce its authentic sensory or perceptual counterpart, and which can be



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expected to have effects different from its counterpart.

It seems to be a unique form of mental representation that allows the human mind to store and manipulate information extracted from its environment, a modality of mental representation characterized by storing perceptual information in a form that has a high degree of structural similarity to perception (Denis, 1989). This mental representation refers to the appearance in memory of the work of one or more entities with their own reality, resulting from the activation, under the impulse of a stimulus, of one or more elements of multisensory information previously stored in long-term memory (Helme-Guizon, 1997).

The degree of similarity could refer to vividness, and it is particularly from this angle that Santarpia, Blanchet, Poinot, Lambert, Mininni, and Thizon-Vidal (2008) propose that the ability to have vivid images, i.e., to be able to construct visual mental representations that approximate perception, refers to seeing as clearly as possible with the mind's eye. In line with this, the vividness of the mental image signifies the level of sensory approximation of real perception. This then “presents” itself in the form of explicit conscious processing that may relate to future scenarios.

The vividness of imaginary imagery, which concerns imagined, anticipated, and supposed future scenarios, has been interpreted as a combination of two elements: clarity and vividness (Marks, 1973). The clarity of a visual image refers to the brightness of its colors and the sharpness of its contours and details. The vividness of a visual image refers to its dynamism, vigor, and salience (Marks, 1999). The vividness of mental imagery, referring to the clarity and vividness of the representation and experience of sensory information without direct external stimuli, is thought to influence career choice (Nathan & Hill, 2012; Septania & Syah, 2020; Tovi, in press) and to be influenced by regulatory focus (Roy & Phau, 2014; Tamim et al. 2022).

These lines of research raise questions about the role of vivid mental imagery in the relationship between regulatory focus and career choice in light of theories of regulatory congruence (e.g., Higgins, 2005) and mental imagery (Lang, 1979). The objective of the study is to evaluate the identity of mental imagery in the interaction between regulatory focus and career choice. Such a study not only allows us to understand the importance of vivid mental imagery in individuals

with different focuses when choosing a career, but also to define plans but also to define action plans to boost entrepreneurship, for example, in the context of combating unemployment.

Regulatory congruence theory

When a goal is pursued in a way that corresponds to the subject's orientation, a regulatory congruence effect occurs (Higgins, 2005). In other words, regulatory congruence occurs when the means used by a person to approach a desired state correspond to the means associated with the regulatory focus they experience, or when a person uses their preferred means to pursue their goals, the strategy that is appropriate for pursuing the given goal. In this correspondence, the person feels a sense of rightness about the goal being pursued and their commitment to pursuing that goal is increased; they feel better about what they are doing (Higgins, 2000a). For example, a promotional person who enthusiastically achieves their aspiration; a preventive person who cautiously solves a problem.

According to accessory regulatory congruence, the framing does not directly concern the situation of influence. It involves, for example, preparing regulatory congruence before presenting the choice-making situation. In other words, it is a matter of seeing to what extent the state of prior regulatory congruence can influence an independent situation (Freitas & Higgins, 2002). For example, when faced with a choice between salaried employment and entrepreneurship, highly vivacious individuals will be more inclined towards entrepreneurship than salaried employment in terms of regulatory congruence.

Lang's bio-informational theory (1979)

Lang's bio-informational theory (1979) is a theory that considers images to be logical or verbal propositional structures, and that imagery and observable behavior are closely interrelated. Later, Lang (1985) added that mental imagery stems from the brain's ability to produce information and is very precisely organized into three levels stored in long-term memory: stimulus proposition, response proposition, and meaning proposition. The stimulus proposition, which includes the content of the scenario to be imagined, is based on visual and verbal information and provides information about the imagined environment. The response proposition associates verbal parameters with behaviors. Finally, the meaning proposal would

contain information about the meaning of the stimuli and the consequences of the actions. These ideas suggest that the vividness of the imagined defines individuals' choices and is particularly dependent on regulatory focus.

Vividness of mental imagery and career choice

Research has linked the professional domain and mental imagery (Blazhenkova & Kozhevnikov, 2010; Zaleskiewicz, Traczyk & Sobkow, 2023). For example, Zaleskiewicz, Traczyk, and Sobkow (2023) found that risky recreational activities and financial activities induce more mental imagery and analytical thinking, respectively. The valence and vividness of this mental imagery are mechanisms through which mental imagery influences decision-making in recreational activities, compared to financial activities, which rely on calculations and negative imagery. According to the authors, risk-taking is promoted by the generation of vivid and positive mental imagery, while the absence of risk-taking is promoted by negative mental imagery. Blazhenkova and Kozhevnikov (2010), measuring the vividness of mental imagery in students and professionals in the sciences, humanities, and visual arts, found that professionals and students in the visual arts reported more developed visual imagery than their counterparts in the sciences and humanities.

In the same vein of linking vivid mental imagery and career choice, Gouveia (2022), studying the incidence of different degrees of imagination or lack thereof among students in three different fields: the fields of biology, exact sciences (mathematics, chemistry, physics) and human sciences, notes that biology courses attract people with greater mental visualization skills, while mathematics and exact sciences courses attract more individuals with weaker mental visualization skills. There therefore appears to be a predisposition, even if unconscious, or a greater identification with certain careers, depending on each individual's mental visualization abilities. In other words, a preference for certain professions depends on the degree of mental imagery, or rather, this explains why one field of knowledge attracts certain people more than others.

Based on these findings, it is possible that the vividness of mental imagery differentiates people in terms of their choice of career (Nathan & Hill, 2012; Septania & Syah, 2020). The psychological functions

of mental imagery make it a very useful cognitive tool for decision-making, because when individuals produce and process visual images, they can pre-experience or test the rewarding or threatening nature of the future consequences of their choices (Blackwell, 2020; Zaleskiewicz et al., 2023).

This highlights the importance of individual variability in the ability to generate vivid mental images (Milton et al., 2021; Zeman, 2024; Zeman et al., 2020). This variability sheds light on and reinforces the idea that people with an increased ability to generate vivid mental images also have heightened emotional responses to these images compared to people who are unable to visualize and report little or no use of vivid mental imagery in everyday life (Keogh & Pearson, 2018; MacKisack et al., 2016; Zeman, 2020). This variability in the vividness of mental imagery could influence career choices.

Indeed, the choice of an entrepreneurial career, as a decision, would be the result of greater clarity, vividness, and detail, in order to elicit the positive emotions involved in the options. Entrepreneurship, an activity involving discovery, mental flexibility, and uncertainty as a factor in generating more options, innovations, and a departure from conformity and the beaten path, would be consistent with vivid mental imagery. Generating more vivid mental images of one's personal goals is supposed to increase the perceived probability of achieving those goals (Kahneman & Tversky, 1982). A salary-based career, as a path that is more or less known in advance in terms of phases, procedures, earnings, and tasks that are more or less repetitive, under the seal of a decision-maker, would not involve detailed, vivid, clear mental imagery.

Regulatory focus and vividness of mental imagery

Given the explanatory function of vivid mental imagery in career choice, which highlights its importance, studies seek to identify its explanatory factors. In this sense, Blackwell et al. (2013) found that people who reported being very optimistic were more likely to produce vivid mental images of the future, characterized by a highly positive valence. In contrast, research by Du et al. (2022) indicated that anxious people tended to generate vivid images, but these were filled with elements of negative valence. Based on the observation of different states of mind and regulatory focus, authors find that the latter influences

the vividness of mental imagery (Roy & Phau, 2014; Tamim et al. 2022).

Regulatory focus, which is a general principle of regulation (Higgins, 1997; Higgins, 2000b), moderates motivational mechanisms and determines the usual way in which individuals attempt to achieve their goals. It is based on two principles: promotion-focused and prevention-focused regulatory focus. The promotional focus is based on the needs for development, achievement, and the pursuit of continuous advancement according to an idealized conception of oneself. When individuals are regulated by a promotional focus, they strive to achieve their ideals, desires, and aspirations in an abstract state of mind. They are generally concerned with the presence or absence of positive outcomes or events (gain/no gain). Thus, promotionally focused students would be more attracted to new business opportunities that offer the possibility of new gains and would be sensitive to the transition from a status quo situation to a more positive one (Higgins, 1997). They perceive opportunities rather than problems and implement enthusiastic strategies to achieve their goals. Furthermore, when desired (success) and undesired (failure) end states are achieved, they experience positive and activating emotions such as joy and happiness, and negative and non-activating emotions such as sadness and despondency, respectively.

The second principle, the regulatory focus on prevention, is based on the need for security and a focus on safety and responsibility. When individuals are regulated by a preventive focus, they strive primarily to fulfill or comply with their obligations, duties, and responsibilities.

They are generally concerned with the presence or absence of negative outcomes or events (loss/non-loss) and implement vigilant strategies to achieve this. Thus, they are motivated by the need to protect themselves against threats, avoid losses and failures; they focus on the safest outcomes that correspond to their conception of what they think they should do, in a concrete state of mind (Higgins, 1997). This approach to regulatory focus sheds light on the possible idea that promotional thinking, compared to preventive thinking, produces more vivid mental imagery (Tovi, in press).

Regulatory focus and career choice

In addition to differentiating individuals in terms of vividness of mental imagery, regulatory focus

explains career choice (Chen et al., 2018; Gu et al., 2016; Jaskiewicz et al., 2016; Johnson, Monsen, & MacKenzie 2017; Oren, 2011; Tovi, 2022b). Specifically, Tovi (2022b) finds that students with a promotional regulatory focus are more likely to choose entrepreneurship than working in the civil service compared to their preventive peers, and that the level of mental representation explains career choice specifically among promotional individuals. In Oren (2011), subjects with a promotional focus and those with a preventive focus intend to be self-employed and organizational employees, respectively.

And even though Tovi (in press) finds that the spontaneous use of mental imagery explains career choice, he has not addressed the influence of the vividness of mental imagery, its role in the relationship between regulatory focus and career choice, and especially in a theoretical framework of regulatory congruence (Higgins, 2005) and Lang's contribution (1979).

Does the vividness of mental imagery mediate the influence of regulatory focus on career choice? Specifically, does regulatory focus influence career choice? Furthermore, does regulatory focus influence the vividness of mental imagery? Finally, does the vividness of mental imagery differentiate undergraduate students in terms of their career choices?

The answers to these questions will reveal both theoretical and practical implications for supporting job seekers and creating training programs to stimulate entrepreneurship. This stimulation will help to alleviate the saturation of the salaried job market to a certain extent. In other words, understanding how regulatory focus differentiates individuals in terms of their choice to become entrepreneurs or work for a third party, specifically in the civil service, would guide strategies for learning instrumental skills.

To this end, this study, which falls within the field of differential cognitive psychology, aims to evaluate the role of mental imagery vividness in the relationship between regulatory focus and career choice among students. To do so, we developed hypotheses based on research on career choice informed by regulatory focus and mental imagery theories. The methodology based on these hypotheses yielded results that we will discuss below.

1.1 Research Hypotheses

H1: Undergraduate students with a promotional regulatory focus are more likely to choose entrepreneurship than

salaried employment compared to their peers with a preventive regulatory focus.

H2: Undergraduate students with a promotional regulatory focus have a higher level of mental imagery vividness than their peers with a preventive regulatory focus.

H3: Undergraduate students with a high level of mental imagery vividness are more likely to choose entrepreneurship than salaried employment compared to those with a low level of mental imagery vividness.

H4: Mental imagery vividness mediates the influence of regulatory focus on career choice.

2. Methodology

2.1 Participants and measurement instruments

We selected, using the convenience sampling method, a sample of 205 students, including 61 males and 144 females with an average age of 21, enrolled in a bachelor's degree program at the Institut Universitaire d'Abidjan (IUA), where we are adjunct professors. To collect the data, we used the regulatory focus questionnaire (Higgins et al., 2001). The questionnaire includes two subscales that assess the history of success in regulating oneself in either a prevention or promotion system. It is a self-reported questionnaire that includes 11 items: 6 promotion focus items (e.g., do you ever do things that make you want to go further, work harder, surpass yourself?) and 5 prevention items (do you often exercise caution?), assessed on a five-point Likert scale (from never 1 point, rarely, sometimes, often to very often, 5 points). In this study, all 11 items are discriminating, meaning that responses to these items vary from one individual to another. Regulatory focus is a qualitative variable with two modalities: promotion focus and prevention focus.

The questionnaire on the vividness of mental imagery (Jankowska & Karwowski, 2022; Marks, 1973). Real-life scenarios are presented to participants, who are asked to rate the vividness of their mental images on a 5-point scale ranging from “perfectly clear and as vivid

as normal vision” to “no image at all.” The vividness of mental imagery is also a dichotomous variable. The career choice questionnaire is taken from Tovi (2022a). Participants are asked to make a choice based on three items. Given your character and abilities, where would you like to work? a) in the public sector, b) in the private sector, c) on my own account. Participants must choose between the three possible answers. We assigned one point to the career modality each time it was chosen and 0 when it was not chosen. The regulatory focus, a dichotomous variable (promotion focus and prevention focus), the vividness of mental imagery, a dichotomous variable, and career choice, a trichotomous variable (self-employment, private sector, civil service).

2.2 Data collection procedure

With the assistance of teachers who were not informed of the study's objectives, we distributed the questionnaires during the hours set aside for this purpose. Before distributing the questionnaires, we explained the purpose of the study and emphasized the confidentiality of the responses. We also told students that they were free to participate in the study or not. The collective data collection during teaching hours in the second semester of the 2024-2025 academic year lasted no more than one hour. The order in which the questionnaires were distributed was counterbalanced.

3. Results

To assess the role of mental imagery in the relationship between focus and career choice, we applied the approach of Baron and Kelly (1986) to measure the different relationships between the variables under study. But first, let us recall that gender and ethnic origin are not confounding variables in career choice ($P = 0.894$; $P = 0.625$). The results show that regulatory focus does not influence career choice (observed Khi^2 (1.133) < critical Khi^2 (5.991); p-value 0.568 > 0.05), but it does have a nearly significant influence on the vividness of mental imagery (at 1 d d l, observed $\text{Khi}^2 = 3.482$ and critical Khi^2 (3.841), p-value = 0.062).

Table showing the influence of regulatory focus on the vividness of mental imagery

		vividness of mental imagery		Total
		High vividness of mental imagery	Low vividness of mental imagery	
Regulatory	Prévention	56	65	121
Focus	Promotion	50	34	84
Total		106	99	205

The vividness of mental imagery does not significantly influence career choice (at 2ddl, observed χ^2 (2.847) < critical χ^2 (5.991), p -value = 0.241 > .05).

4. Discussion

The aim of this study was to identify the role of the vividness of mental imagery in the relationship between regulatory focus and career choice among undergraduate students. The three results are presented as follows. The regulatory focus does not influence career choice, even though it almost influences the vividness of mental imagery. However, this is an essential condition in Baron and Kenny's (1986) approach, which must lead to the confirmation or otherwise of the supposed mediating variable, in this case the vividness of mental imagery. Therefore, the vividness of mental imagery cannot mediate the influence of regulatory focus on career choice among these undergraduate students (Baron & Kenny, 1988 ; MacKinnon et al., 2002).

By finding that vividness of mental imagery does not significantly influence career choice, we disagree, to a certain extent, with studies that show that vividness of mental imagery influences risk-taking as a characteristic of entrepreneurship (Septania & Syah, 2020; Zaleskiewicz, Bernady, & Traczyk, 2020; Zaleskiewicz, Smieja & Seweryn, 2025), and facilitates entrepreneurial influence (Ashraf, Bryan, Lacovono, Delfino, Holmes, & Pople, 2022; Orkin, Garlick, Mahmud, Sedlmayr, Haushofer, & Dercon, 2022).

Although these authors show that vivid mental imagery encourages individuals to take risks, and that entrepreneurial programs based on vivid mental imagery boost entrepreneurial outcomes compared to traditional entrepreneurial training programs, they do not present vivid mental imagery as a mechanism that explains career choices. The focus was on highlighting the facilitating effect of vivid mental imagery on risk-taking and economic outcomes, rather than studying the influence of mental imagery on career choice. Studies that have linked vivid mental imagery and career choice (Blazhenkova & Kozhevnikov, 2010; Gouveia, 2022) have also not studied how individuals choose between self-employment and working for someone else based on their mental imagery. Gouveia (2022) merely assumed that there is an unconscious predisposition or greater identification with certain careers depending on

each individual's mental visualization abilities.

The lack of significant results regarding the influence of regulatory focus on career choice differs from many contributions (Chen et al., 2018; Gu et al., 2016; Jaskiewicz et al., 2016; Johnson, Monsen, & MacKenzie, 2017; Oren, 2011; Tovi, 2022a). Similarly, finding that this regulatory focus influences the vividness of mental imagery is inconsistent with other research (Zaleskiewicz, Bernady, & Traczyk, 2020; Roy & Phau, 2014; Tamim et al., 2022)

One explanation for the insignificant influence of regulatory focus on career choice could be that when preventives choose entrepreneurship, it may be in light of the changing economic environment in Côte d'Ivoire, which makes it impossible for the state to find work for everyone. In addition, there has been an increase in online sales, which appears to be a kind of "trend," as well as growth in the informal sector. These preventives may imagine scenarios related to self-employment without a real awareness of the requirements. Furthermore, the fear of a difficult future (Lang, 1979) may have prompted these preventives to make this entrepreneurial choice in order to increase their chances of professional integration and create security, thereby eliminating any difference between them and their promotional counterparts (Petrou, Démerouti & Hafner, 2015; Petrou, Baas & Roskes, 2020; Xiang, Cai, Qi, Ye, Jiang, Lyu, & Hu, 2024).

Given that stability can be destabilized, strengthening security to regain a state of equilibrium means demonstrating change. In this case, individuals with different focuses may mentally contrast each other, and the level of congruence between characteristics of the socioeconomic environment and those of the individual cancels out any variability in career choice (e.g., Higgins, 2005 ; Petrou, Démerouti, & Hafner, 2015). For example, if preventive students observing various economic changes may be stressed and destabilized, they would see creativity, innovation, and entrepreneurial choices as options for adaptation (Sevincer, Stressman, & Oettingen, 2018). This understanding, which may be consistent with the articulation of creative and analytical thinking modes, promotion and prevention foci, or adaptive regulatory incongruence among these undergraduate students at this private university (Higgins, 2005), would explain any differences in career choices.

Oren's (2011) findings differ from ours in that our sample consists of adolescents and undergraduate students, while his consists of adults who are already working in various sectors. Cognitive or motivational structures or patterns would be strongly consolidated and established. For example, Tovi (2022a) found among master's students in Abidjan that promotional students choose entrepreneurship over civil service more than preventive students. Finally, this lack of significant results would prompt consideration of the development or use of other questionnaires in data collection from these undergraduate students (Ko, & Han, 2013) with a view to reaching a definitive conclusion.

5. Conclusion

In a changing job market with high unemployment, career choice is becoming a topic of interest. This choice still results in the more or less fortunate consequences of any choice. In this study, the vividness of mental imagery is not a mediating variable. However, the absence of differences in career choices among students with different regulatory focuses seems to reflect these participants' ability to adapt to our country's economic environment. As for the insignificant influence of vivid mental imagery on career choices, this invites reflection on the methodology used, which opens up new avenues for research.

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