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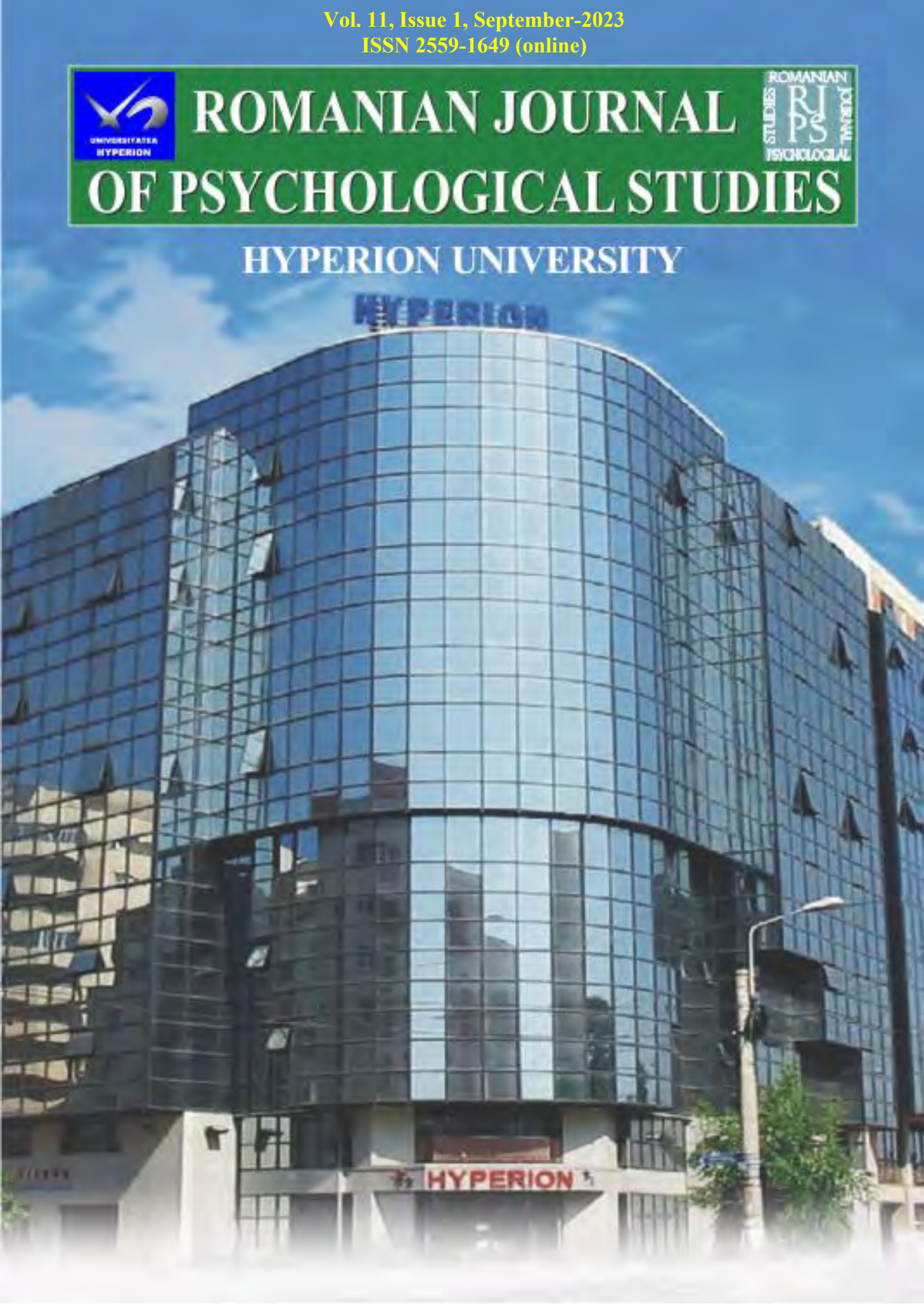

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http://rjps.hyperion.ro, *office@rjps.hyperion.ro*

CONTENTS

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THE INFLUENCE OF ATTACHMENT STYLE AND NARCISSISTIC PERSONALITY DISORDER ON SATISFACTION IN THE COUPLE RELATIONSHIP

MARINELA, SÎRBU[a] MIRELA CLAUDIA, MOMANU [a]
[a] *Hyperion University, Faculty of Psychology and Educational Sciences*
Department of Psychology

Abstract

This research was started based on the general interest in narcissism and its influence in married life, insufficient quantitative research on narcissism and its influence in married life, and to complement them, since most of the research in the field has focused mainly on the theoretical part and on the analysis of some case studies, regarding the presence of narcissism criteria and their manifestation in married life. The research carried out focused on highlighting some relationships between attachment styles, the presence of some criteria of narcissistic personality disorder and the satisfaction felt by a person within the couple relationship, starting from the premises that there are certain links between attachment style and narcissism on a on the one hand, between narcissism and satisfaction within the couple relationship, and between attachment style and satisfaction within the couple relationship on the other hand. Both attachment types and narcissistic personality disorder generate behavior patterns that are extremely resistant to change, even when they cause the individuals some problems. However, understanding more about these aspects and their influence within the couple relationship, the results of this research are encouraging, with applications in both the theoretical and practical framework of couple and family psychotherapy, with the possibility of being used in explaining and possibly diminishing certain behaviors that act against the quality of life and the emotional or mental system.

Keywords: *narcissistic personality disorder, attachement styles, couple satisfaction*

1. INTRODUCTION

Benjamin Karney indicates in his studies that satisfaction in a couple is a complex and multidimensional phenomenon (Karney, 1995). Satisfaction in the couple is defined as an emotional state felt on a personal level, of being satisfied with the interactions within the life of the couple, with the experiences had and the expectations created. The problem of psychosexual identity, objectified in the area of couple relations, also belongs to couples and intimacy. The most important and

Corresponding author: Momanu Mirela
E-mail address: mirelamomanu@gmail.com

most frequently cited components of satisfaction in a couple are respect, involvement, communication and the quality of sexual life.

Marital relationship satisfaction has been studied and researched in simple or complex research designs. A major reason for the strong scientific interest in relationship satisfaction is its importance to personal and family well-being. Evidence suggests that being married or cohabiting in a close relationship correlates with higher levels of personal well-being, and furthermore, relationship satisfaction is one of the most predictive factors for relationship continuation. Given that couples who experience declines in relationship satisfaction are more likely to dissolve the relationship in the future, it is important to identify factors that contribute to change in relationship satisfaction (Sciangula & Morry, 2009).

A key issue in the couple relationship is attachment—a concept that describes the relationship pattern (needs, strategies, and vulnerabilities) that is formed by the intersection of the individual's temperament and the temperaments, personalities, and attachment patterns of those who care for him. Attachment patterns are central to the development of core beliefs and values regarding fundamental issues of safety, trust, and survival (Lepore, 2010).

Relational patterning is the repetition of the same behaviors multiple times with new people in the individual's life. Repetition of patterns is not only within romantic relationships, as the same types of problems are encountered repeatedly in any type of relationship. Relationship patterns are also called relationship templates or relationship patterns, because they are almost formulas that the individual always uses, even without realizing it. People are prone to repeating certain patterns of unhealthy relationships, consciously or not. Thus, a pattern is reached from which the individual should escape, unless, consciously or not, he continues to go round in the same circles, endlessly. People usually repeat these patterns in the hope of getting a different result. Many of the individuals have comfort zones and return to them, because they are much more controllable than the unknown that a change brings, but instead these zones of conformity do not allow the growth and development of the person (Lelord & Andre, 2022).

Predominantly conditioned by the biological hereditary basis, as well as by the variability it supports within the interaction of individuals with the environment in which they develop, personality becomes a frame of reference that is characterized as having a continuous dimension, which varies simultaneously on several dimensions, so that, in order to create a description of an individual's personality, it is necessary to know the weight of each personality trait. Differences between individuals, known both psychologically and from a sociological perspective, reinforce the idea that individual behavior varies according to the existential context. Each individual has a different way of behaving in certain life situations, but doing it in a certain way, similar every time, a fact that exposes individual behavior as stable and supported by a certain predictability specific to each individual (Sîrbu, 2016).

The concept of narcissistic personality was first published in 1925 by Robert Waelder, although as early as 1889 Paul Nacke and Havelock Ellis used the term narcissism in the field of psychiatry. The authors mentioned above described

individuals with a narcissistic personality as condescending, feeling superior to others, preoccupied with themselves and permanent admiration, while also showing a lack of empathy, often reflected in the sexuality of the investigated groups, which is based on purely physical pleasure, without no implication in emotional intimacy report (Bollas, 2022)

This trait, like any other, exists on a spectrum. At one end of the spectrum is what some call healthy narcissism. This is represented by a positive sense of self, associated with well-being or personal satisfaction. People with a healthy self-image can balance their self-esteem through prosocial behaviors that nurture a sense of reciprocity in relational dynamics. At the other end of the spectrum, narcissism can have a negative impact on how the person sees themselves and the style in which they interact with others. Thus, for narcissistic personality disorder to be present, symptoms must be present in most areas of a person's life and remain stable over time, whereas in narcissistic style, narcissistic traits may appear sometimes or only in certain contexts (Haller, 2018).

2. OBJECTIVE AND HYPOTHESES

2.1. OBJECTIVE

The research objectives focus on:

1. Identifying correlations between attachment style and narcissism.
2. Observing some correlations between narcissism and satisfaction within a couple (both with general satisfaction within a couple relationship and with its component elements: contentment within the couple, cohesion within the couple, understanding within the couple and emotional expression between the members of the couple).
3. The evaluation of specific correlations regarding the dyads, regarding the securing type attachment, the avoidant type attachment, respectively the anxious type attachment and the general satisfaction within the couple relationship.

2.2. HYPOTHESES

The research hypotheses are the following:

1. It is assumed the existence of some correlations between the factors of secure type attachment, avoidant type attachment, anxious type attachment and the presence of narcissism criteria.
2. It is assumed the existence of some correlations between the presence of narcissism criteria and the factors of general satisfaction within a couple, namely contentment within a couple, cohesion in the couple relationship, consensus within a couple and emotional expression between the members of the couple.
3. It is assumed the existence of some correlations between the factors of secure type attachment, avoidant type attachment, anxious type attachment and general satisfaction within a couple.

3. METHOD

3.1 GROUP OF PARTICIPANTS

The lot on which the research was carried out is composed of 120 respondents, with an average age of the respondents of 42 years, 60% being female respondents and 40% male respondents. From the point of view of completed studies, 95% have completed higher education and 5% secondary education. Within the studied group, 41% of the respondents are in a marital relationship, 31% are in a consensual partner relationship and 28% have left a couple relationship.

3.2 INSTRUMENTS

1. The attachment type scale was developed by Collins and Read (1990): AAS (Adult Attachment Scale) and is intended to measure attachment type and differentiate subjects accordingly.

2. The SCID II – DSM IV questionnaire, which consists of a set of questions that refer to the respondent's usual way of being, i.e. how he or she has usually felt or behaved in recent years. Only the items from no. 73 to 89 of the SCID II, which correspond to narcissistic personality disorder.

3. The DAS (Dyadic Adjustment Scale) couple satisfaction questionnaire which contains 32 items and includes 4 subscales: Satisfaction within a couple, Consensus within a couple, Cohesion within a couple, Affective expression between couple members.

3.3 THE PROCEDURE

The questionnaires were completed online by the respondents, specifying that both the code of ethics and the GDPR legislation were respected. All participants were instructed about the research and consented, being aware of their anonymous identity.

3.4 RESEARCH DESIGN.

For the design of the research, the following variables were taken into analysis:

1. Dependent variables: secure attachment, avoidant attachment, anxious attachment, presence of narcissism criteria, general satisfaction in the couple, contentment within the couple, cohesion within the couple, understanding within the couple and affective expression between the members of the couple.

2. The independent variables: gender of subjects, age, completed studies, type of couple relationship in which they are, duration of couple relationship (present or the last one they were in).

The design of the conducted research is of the following type:

N: X O1,2,3

Where: N – represents the non-randomized group (sample); X – represents the interventions (measurements) carried out on the respondents in the sample; O (1,2,3) – are the three measurements made with the help of the three tools used.

4. RESULTS

The analysis of the resulting data, after measuring the type of attachment and the presence of narcissism criteria, indicates that 37% of the respondents have a predominantly secure attachment type, 48% a predominantly avoidant attachment type and 15% report a predominantly anxious attachment type. Regarding the presence of the criteria that define narcissism (personality style and narcissistic personality disorder), 4% of respondents did not report any criteria, 37% fulfill 1-4 criteria (which corresponds to a narcissistic personality style) and 59 % met more than 5 criteria (according to SCID II – DSM IV) which indicates the presence of a narcissistic personality disorder. The statistical analysis of normality revealed that all the obtained dependent variables do not have a normal distribution, so non-parametric statistical tests were applied to verify the hypotheses.

4.1. TABLES AND FIGURES

H1: The existence of some correlations between the factors of secure type attachment (AS), avoidant type attachment (AE), anxious type attachment (AA) and the presence of narcissism criteria (N) is assumed. In order to verify this first hypothesis, the Spearman correlation coefficient was calculated. Table 1 shows the results of this analysis.

Table no. 1 – Results of the Spearman correlation test for H1

Correlations

			AS	AE	AA	N
Spearman's rho	AS	Correlation Coefficient	1.000	-.529**	-.180*	-.537**
		Sig. (2-tailed)	.	.000	.049	.000
		N	120	120	120	120
	AE	Correlation Coefficient	-.529**	1.000	.155	.737**
		Sig. (2-tailed)	.000	.	.092	.000
		N	120	120	120	120
	AA	Correlation Coefficient	-.180*	.155	1.000	.184*
		Sig. (2-tailed)	.049	.092	.	.044
		N	120	120	120	120
	N	Correlation Coefficient	-.537**	.737**	.184*	1.000
		Sig. (2-tailed)	.000	.000	.044	.
		N	120	120	120	120

**. Correlation is significant at the 0.01 level (2-tailed).

The results reject the null hypothesis and confirm that there is a significant correlation between secure attachment and narcissism criteria ($p < .001$). The correlation coefficient is negative, according to the sign of the correlation coefficient ($r = - 0.537$), which indicates that when the first variable (secure attachment) increases, the second variable (narcissism) decreases. The correlation coefficient is in the range (0.4 - 0.6), which means a good, reasonable intensity correlation. The effect size (R-Square) is 0.288 – mean effect value, indicating that the effect obtained is unlikely to have occurred by chance. Being statistically significant, the effect appears to be important from a practical point of view as well.

Also, the results reject the null hypothesis and confirm that there is a significant correlation between avoidant attachment and narcissism criteria ($p < .001$). The correlation coefficient is positive, according to the sign of the correlation coefficient ($r = 0.737$), which indicates that when the first variable (avoidant attachment) increases, the second variable (narcissism) also increases. The correlation coefficient is in the range (0.6 - 0.8), which means a high intensity correlation. The effect size (R-Square) is 0.543 – the effect value of the large effect, which indicates that the effect obtained is significant, statistically and practically.

Similarly, the results reject the null hypothesis and confirm that there is a significant correlation between anxious attachment and narcissism criteria ($p < .05$). The correlation coefficient is positive according to the sign of the correlation coefficient ($r = 0.184$), which indicates that when the first variable (anxious attachment) increases, the second variable (narcissism) also increases. The correlation coefficient is in the range (0 - 0.2), which means a fairly weak intensity correlation. The size of the effect (R-Square) is 0.033 – small effect value, which indicates that the effect obtained although statistically significant, the results do not prove an important relevant practice, it is possible that the effect detected actually does not exist (being present only a power high stat).

It is concluded that there is a negative correlation of medium intensity between secure attachment and the presence of narcissism criteria, which means that in people with strong secure attachment, the presence of narcissism criteria is diminished. Also, between avoidant type attachment and the presence of narcissism criteria there is a positive correlation of high intensity, which means that in people with high avoidant type attachment, the presence of narcissism criteria is also at a high level. It is also concluded that there is a positive correlation of low intensity between anxious attachment and the presence of narcissism criteria, which means that in people with a high level of anxious attachment, the presence of narcissism criteria is also high.

H2: It is assumed the existence of some correlations between the presence of narcissism criteria (N) and the factors of general satisfaction within a couple (DAS), namely contentment within a couple (DS), cohesion within the couple relationship (DCOH), consensus within a couple (DCON) and emotional expression (EA) between the members of the couple.

In order to verify the second hypothesis, the Spearman correlation coefficient was calculated. Table 2 presents the results of this analysis.

Table no. 2 – Spearman correlation test results for H2

Correlations

			N	DS	DCOH	DCON	EA	DAS
Spearman's rho	N	Correlation Coefficient	1.000	-.681**	-.626**	-.661**	-.476**	-.669**
		Sig. (2-tailed)	.	.000	.000	.000	.000	.000
		N	120	120	120	120	120	120
	DS	Correlation Coefficient	-.681**	1.000	.835**	.850**	.746**	.942**
		Sig. (2-tailed)	.000	.	.000	.000	.000	.000
		N	120	120	120	120	120	120
	DCOH	Correlation Coefficient	-.626**	.835**	1.000	.828**	.766**	.901**
		Sig. (2-tailed)	.000	.000	.	.000	.000	.000
		N	120	120	120	120	120	120
	DCON	Correlation Coefficient	-.661**	.850**	.828**	1.000	.776**	.959**
		Sig. (2-tailed)	.000	.000	.000	.	.000	.000
		N	120	120	120	120	120	120
	EA	Correlation Coefficient	-.476**	.746**	.766**	.776**	1.000	.833**
		Sig. (2-tailed)	.000	.000	.000	.000	.	.000
		N	120	120	120	120	120	120
	DAS	Correlation Coefficient	-.669**	.942**	.901**	.959**	.833**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.
		N	120	120	120	120	120	120

**. Correlation is significant at the 0.01 level (2-tailed).

The results reject the null hypothesis and confirm that there is a significant correlation between the criteria of narcissism and satisfaction within a person's couple ($p < .001$). The correlation coefficient is negative, according to the sign of the correlation coefficient ($r = - 0.669$), which indicates that when the first variable increases, the second variable decreases. The correlation coefficient is in the range (0.6 - 0.8), which means a high intensity correlation. The effect size (R-Square) is 0.447 – signifying a medium to large effect size, indicating that the effect obtained is unlikely to have occurred by chance and appears to be practically important.

Also, the results reject the null hypothesis and confirm that there is a significant correlation between the criteria of narcissism and satisfaction within a person's couple ($p < .001$). The correlation coefficient is negative, according to the sign of

the correlation coefficient (r = - 0.681), which indicates that when the first variable increases, the second variable decreases. The correlation coefficient is in the range (0.6 - 0.8), which means a high intensity correlation. The effect size (R-Square) is 0.463 – signifying a medium to large effect size, indicating that the effect obtained is unlikely to have occurred by chance and appears to be practically important.

Similarly, the results reject the null hypothesis and confirm that there is a significant correlation between narcissism criteria and consensus within a person's couple ($p < .001$). The correlation coefficient is negative, according to the sign of the correlation coefficient (r = - 0.626), which indicates that when the first variable increases, the second variable decreases. The correlation coefficient is in the range (0.6 - 0.8), which means a high intensity correlation. The effect size (R-Square) is 0.391 – signifying a medium to large effect size, indicating that the effect obtained is unlikely to have occurred by chance and appears to be practically important.

It is also noted that the results reject the null hypothesis and confirm that there is a significant correlation between the criteria of narcissism and the cohesion of a person's couple relationship ($p < .001$). The correlation coefficient is negative, according to the sign of the correlation coefficient (r = - 0.661), which indicates that when the first variable increases, the second variable decreases. The correlation coefficient is in the range (0.6 - 0.8), which means a high intensity correlation. The effect size (R-Square) is 0.436 – signifying a medium to large effect size, indicating that the effect obtained is unlikely to have occurred by chance and appears to be practically important.

Also, the results reject the null hypothesis and confirm that there is a significant correlation between the criteria of narcissism and affective expression between the members of a person's couple ($p < .001$). The correlation coefficient is negative, according to the sign of the correlation coefficient (r = - 0.476), which indicates that when the first variable increases, the second variable decreases. The correlation coefficient is in the range (0.4 - 0.6), which means a good, reasonable intensity correlation. The effect size (R-Square) is 0.226 – which signifies a small to medium effect size, indicating that the effect obtained is unlikely to have occurred by chance.

It is concluded that between the criteria of narcissism and the satisfaction within a person's couple there is a negative correlation of medium intensity, which means that in people in whom the presence of the criteria of narcissism is high, the satisfaction within a couple of a person is low. Also, between the criteria of narcissism and satisfaction within a person's couple there is a negative correlation of medium intensity, which means that in people in whom the presence of criteria of narcissism is high, the satisfaction within a person's couple is low. It is also concluded that between the criteria of narcissism and the consensus within a person's couple there is a negative correlation of medium intensity, which means that in people in whom the presence of narcissism criteria is high, the consensus within a person's couple is low. Similarly, between the narcissism criteria and the cohesion of a person's couple relationship there is a negative correlation of medium intensity, which means that in people in whom the presence of the criteria of narcissism is high, the cohesion of a person's couple relationship is low. Finally, it is concluded that between the criteria of narcissism and the cohesion of a person's couple

relationship there is a negative correlation of low to medium intensity, which means that in people with a high presence of the criteria of narcissism, the emotional expression between the members of the couple of a people is low.

H3: The existence of correlations between the factors of secure type attachment (AS), avoidant type attachment (AE), anxious type attachment (AA) and general satisfaction within a couple (DAS) is assumed. In order to verify the third hypothesis, the Spearman correlation coefficient was calculated. Table 3 presents the results of this analysis.

Table no. 3 – Spearman correlation test results for H3

Correlations

			AS	AE	AA	DAS
Spearman's rho	ASt	Correlation Coefficient	1.000	-.529**	-.180*	.465**
		Sig. (2-tailed)	.	.000	.049	.000
		N	120	120	120	120
	AE	Correlation Coefficient	-.529**	1.000	.155	-.669**
		Sig. (2-tailed)	.000	.	.092	.000
		N	120	120	120	120
	AA	Correlation Coefficient	-.180*	.155	1.000	-.157
		Sig. (2-tailed)	.049	.092	.	.087
		N	120	120	120	120
	DAS	Correlation Coefficient	.465**	-.669**	-.157	1.000
		Sig. (2-tailed)	.000	.000	.087	.
		N	120	120	120	120

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The results reject the null hypothesis and confirm that there is a significant correlation between secure attachment and satisfaction within a person's couple ($p < .001$). The correlation coefficient is positive, according to the sign of the correlation coefficient ($r = 0.465$), which indicates that when the first variable increases, the second variable also increases. The correlation coefficient is in the range (0.4 - 0.6), which means a good, reasonable intensity correlation. The effect size (R-Square) is 0.216 – which signifies a medium effect size, indicating that the effect obtained is unlikely to have occurred by chance. Being statistically significant, the effect appears to be important from a practical point of view as well.

The results also reject the null hypothesis and confirm that there is a significant correlation between avoidant attachment and satisfaction within a person's couple ($p < .001$). The correlation coefficient is negative, according to the sign of the correlation coefficient ($r = - 0.669$), which indicates that when the first variable

increases, the second variable decreases. The correlation coefficient is in the range (0.6 - 0.8), which means a high intensity correlation. The effect size (R-Square) is 0.447 – signifying a medium to large effect size, indicating that the effect obtained is unlikely to have occurred by chance and appears to be practically important.

The results retain the null hypothesis and conclude that there is no significant correlation between anxious attachment and satisfaction within a person's couple ($p > .05$).

It is concluded that between the attachment of the secure type and the satisfaction within a couple of a person there is a positive correlation of medium intensity, which means that in people in whom the attachment of the secure type is at a high level, the satisfaction within a couple of a persons is raised. Also, there is a moderate to high negative correlation between avoidant attachment and a person's marital satisfaction, which means that for individuals high in avoidant attachment, marital satisfaction of a person is low. Regarding anxious attachment type, it is concluded that there is no significant correlation between anxious attachment type and satisfaction within a person's couple.

5. CONCLUSIONS

Despite the relationship of narcissism to interpersonal dysfunction, surprisingly little empirical research has been devoted to understanding the effect of narcissism on intimate relationships in general or marital relationships in particular. Mainly, this research in the field has highlighted the fact that narcissism is associated with a number of behaviors and actions, which affect both sexual and relational satisfaction. However, research on the association between personality and behavior demonstrates that personality traits such as narcissism only predict behavior in domains that activate components of the personality system (McNulty & Widman, 2013).

The conclusions of this research focus on a triangulation link between the type of attachment, the presence of the criteria that describe the narcissistic personality traits and the elements of satisfaction in the couple, these being a basis from which further research can be started, to complete the area of quantitative research regarding the influence of narcissism in interpersonal relations in contemporary society.

The results obtained after conducting this research indicate that there is a negative correlation between secure attachment and narcissism, and between non-secure attachment (avoidant or anxious) and narcissism there is a positive correlation, so the more the predominant attachment is secure, with both the possibility of manifesting some traits of the narcissistic personality is reduced. It was also observed that between narcissism and satisfaction within a person's couple, there is a negative correlation, which indicates that when narcissistic personality traits are manifested, satisfaction within the couple, consensus with the other member of the couple, couple cohesion, emotional expression within the couple as well as general satisfaction in the couple are at a low level.

Last but not least, the third important conclusion of the research highlights the fact that there is a positive correlation between secure attachment and satisfaction within a person's couple, and between non-secure attachment (avoidant or anxious) and satisfaction within to a person's couple there is a negative correlation, so the more the predominant attachment is of a secure type, the greater the possibility of general satisfaction within a couple.

Studies have shown that the type of attachment is also highlighted within the couple relationship, when one or both partners in dysfunctional relationships that reproduce family patterns manifest a pattern of behavior within the relationship that is, in essence, a remnant of what they have learned early, and which became a reactionary and relational pattern.

The conclusions of this study can have applicative effects, starting from the premise that through psychotherapy requested within a dysfunctional couple relationship, the manifestation of the characteristic elements of narcissistic personality disorder can also be improved, aiming towards a healthy type of narcissism, represented by a feeling of positive self can be associated with a state of well-being, generating a healthy self-image, high self-esteem and manifesting prosocial behaviors that nurture the feeling of reciprocity in relational dynamics.

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THE PSYCHOLOGICAL IMPACT OF COVID-19 PANDEMIC ON MEDICAL STAFF IN BUCHAREST

CRISTIANA, HAICA [a], CRISTINA, COJOCARU-ATASIEI [a]
[a] *Hyperion University, Faculty of Psychology and Educational Sciences*
Department of Psychology

Abstract

The aim of this research is to analyze the psychological impact of the fourth wave of COVID-19 pandemic on medical staff (both doctors and nurses) from the main medical units in Bucharest and explore the relationship between psycho-emotional impairment (measured by the level of anxiety, depression and stress) and the level of exposure to COVID-19 patients. An online questionnaire was sent to the medical staff from several medical units in Bucharest between November and December 2021. The group of subjects consisted of 111 respondents, both doctors and nurses, divided as evenly as possible according to the main analysis criteria: type of activity (first or second line in the fight against COVID-19). Anxiety, depression, and perceived stress were assessed using the GAD-7, PHQ-9 and PSS-14 scales. The main stressors and the impact of the pandemic on the personal and professional life of the evaluated healthcare professionals were also studied.

Results: Healthcare professionals, especially those who worked in the front line, experienced emotional trauma during the COVID-19 pandemic, their levels of anxiety, depression and perceived stress being much higher than the ones of the medical staff from second line. Female professionals experienced a much higher level of stress, anxiety and depression than male staff. At the same time, nurses had a higher level of anxiety and depression comparing to the doctors, while the level of stress was more acute in doctors. Medical seniority had no significant impact on the anxiety, depression or stress perceived by healthcare professionals during the COVID-19 pandemic.

Conclusion: Medical staff experienced high levels of anxiety, depression and stress, especially women and nurses. At the same time, the higher the level of exposure to COVID-19, the higher the risk of psycho-emotional distress, suggesting that ongoing monitoring and intervention is needed.

Keywords: *COVID-19, stress, anxiety, depression, psychological impact, medical staff*

1. INTRODUCTION

The World Health Organization (WHO) declared COVID-19 a pandemic on March 11, 2020, when infections and deaths began to rise exponentially worldwide.

Healthcare workers have played a vital role in our response to COVID-19 pandemic. Previous studies of epidemics and quarantine have suggested that such an

Corresponding author: Cristiana Haica, Cristina Cojocaru-Atasiei
E-mail address: cristianahaica@yahoo.com, cristina_cojocaru13@yahoo.com

extraordinary event has long-term effects on their mental health (Di Trani, Mariani, Ferri, De Berardinis, & Frigo, 2021). Chronic stress, fatigue, fear or guilt of passing on the infection to loved ones, overwork, fear of infection and mortality, lack of breaks or vacations and inflexibility of work schedules can negatively affect their mental health (Søvold, et al., 2021), generating psychological symptoms of depression, stress, anxiety, anger, fear and lack of sleep. These are increasing as the pandemic persists.

A recent meta-analysis investigating the psychological impact of COVID-19 on healthcare professionals shows that they experience higher levels of anxiety (13.0% vs. 8.5%) and depression (12.2% vs. 9.5%) compared to professionals from other areas (Da Silva & Neto, 2020). At the same time, healthcare workers are at high risk of workplace stress, although work-related stress occurs in all professions. Globally, approximately one-third of employees' experience stress at work, but the unique work environment makes healthcare workers more likely to be affected, even more during outbreaks such as COVID-19. The higher the incidence of COVID-19, the more stressed healthcare workers felt. Not less than 43% of frontline healthcare staff experienced significant levels of stress, with a prevalence of 27% in nurses and 17% in medical doctors (Rimmer, 2021).

This psychological pressure can also have unwanted effects on the medical services offered to patients, leading to a decrease in the quality of care and patient safety. If left untreated, stress, anxiety and depression are likely to have long-term health effects on healthcare workers and prevent them from fulfilling their duties, including those related to the optimal control of the COVID-19 pandemic (Bekele & Hajure, 2021).

The need for this research started from the fact that, in Romania, there was a very limited number of studies to evaluate the psychological impact of the pandemic on employees in the medical field. We wanted to shed more light on the effects of the COVID-19 pandemic, because such analyses are essential for an effective management, with practical implications for both healthcare employees and patients, with major consequences on how the healthcare system responds to current or future outbreaks.

This paper aims to analyze the psychological impact that the fourth wave of the COVID-19 pandemic had on the medical staff (medical doctors and nurses) from the main medical units in Bucharest, and to explore the correlation between the psycho-emotional damage (assessed through the level of anxiety, depression and stress) and their exposure to COVID-19 patients. We consider the incidence of COVID-19 to be a determining factor in the evaluation of psychological symptoms, whose intensity increases proportionally to the number of COVID-19 patients the medical personnel came into contact with. We expect, as shown in previous international studies, to register high levels of emotional impairment among healthcare professionals, and the highest frequencies of anxiety, depression and stress symptoms to be reported by those who worked directly with patients with COVID-19. A secondary analysis consists in studying the relationship between psychological impact and socio-demographic (gender) and professional (years of experience and type of professional activity) characteristics.

Additionally, the need for two more analyzes emerged: (1) the identification of main stress factors that modify the existing psycho-emotional balance of the medical staff in the context of COVID-19 pandemic; (2) assessing the extent to which workplace stress during the COVID-19 pandemic affected the quality of personal life, on one hand, and professional efficiency and medical services, on the other hand. This analysis is important to develop the best individual and organizational interventions which could provide support to medical staff during both COVID-19 and future possible pandemics, as well as in everyday activity.

2. OBJECTIVE AND HYPOTHESES

2.1. OBJECTIVE

O1: establish the correlations between the levels of perceived stress, anxiety and depression encountered by the healthcare workers during the fourth wave of the COVID-19 pandemic.

O2: identify the relationship between the level of emotional impairment (stress, anxiety, depression) and the one of exposure to COVID-19 (expressed by the type of activity performed: front-line employees - who worked directly with COVID-19 patients - and second-line employees - who had a lower exposure).

O3: analysis of the relationship between the psychological impact generated by the COVID-19 pandemic (stress, anxiety, depression) and socio-demographic characteristics (gender).

O4: analysis of the relationship between the psychological impact generated by the COVID-19 pandemic (stress, anxiety, depression) and the main professional characteristics (professional level: nurse, resident doctor, specialist doctor; seniority in the medical field).

2.2. HYPOTHESES

We have several working hypotheses:

H1: We assume that, in the evaluated sample of healthcare professionals, there are correlations of different intensities between the level of perceived stress, anxiety and depression.

H2: We estimate that the level of anxiety, depression and perceived stress is higher among healthcare workers in the first line (COVID activity) than among those in the second line (NON-COVID activity).

H3: We assume that there are statistically significant differences between gender categories regarding the levels of stress, anxiety and depression measured among medical staff in Bucharest during the COVID-19 pandemic.

H4: We estimate that, for the medical staff in Bucharest, there are statistically significant differences in the levels of stress, anxiety and depression depending on seniority in the medical field.

H5: We estimate that nurses have the highest levels of stress, anxiety and depression in the sample of evaluated healthcare professionals.

3. METHOD

Participants:

111 respondents were selected, who were divided as equally as possible in terms of the main analysis criteria: the type of performed activity (first line - COVID activity 55.9%, n=62; second line - NON-COVID activity 44.1 %, n=49).

Efforts were made to include in this research healthcare professionals with different characteristics and from different backgrounds. Therefore, we have the following distribution: (1) gender: female - the predominant sample 84.7% (n=94), while only 15.3% (n=17) were male respondents; (2) type of professional activity: 48.6% (n=54) of the respondents were specialist doctors, 13.5% (n=15) resident doctors and 37.8% (n=42) nurses; (3) seniority in the medical field - seniority of over 20 years (49.5%, n=55), aspect directly correlated with the number of specialist doctors.

Method and Instruments:

An online Google Forms survey was distributed among medical staff from Bucharest, between November and December 2021. The questionnaire could be filled in from any electronic device (mobile phone, tablet, laptop) with internet access, lasting, on average, between 15 and 20 minutes. Anxiety, depression and perceived stress were assessed using GAD-7, PHQ-9 and PSS-14 scales. In addition, by applying supplementary questions, the main stressors were also studied, as well as the impact of the pandemic on personal and professional life of the evaluated healthcare professionals.

From the beginning of the questionnaire, the participants were informed about the purpose and conditions of the study; the research complied with international ethical recommendations regarding the absolute confidentiality of the collected data, as well as the anonymity and safety of the participants.

Subsequently, the data was processed in Excel and SPSS v20, using the following: descriptive analysis, along with Kolmogorov-Smirnov normality tests; Pearson correlation analysis; Two independent samples T-test, Mann-Whitney U-test for independent samples, Kruskal-Wallis H-test, One-Way ANOVA with Bonferroni post-hoc analysis.

More than a decade ago, Robert L. Spitzer, Janet B.W. Williams of Columbia University and Kurt Kroenke of Indiana University developed, with support from Pfizer, two easy-to-use scales measuring depression (PHQ-9) and anxiety (GAD-7). They are useful as screening tools, as well as to assess the severity and evolution of symptoms and the response to treatment. At the same time, they are widely used in scientific research.

PHQ-9 (Patient Health Questionnaire) is a frequently used self-report scale, created in 2001, which includes 9 items which assess the presence and severity of depressive symptoms during the last two weeks. the 9 items of this scale are based on DSM-IV criteria and include: (1) anhedonia, (2) depressed mood, (3) insomnia or hypersomnia, (4) fatigue or loss of energy, (5) appetite disturbances, (6) guilt or worthlessness, (7) diminished ability to think or concentrate, (8) psychomotor agitation or retardation, and (9) suicidal thoughts. The results are based on the total score as follows: a score of less than 5 points means no symptoms of depression, between 5 and 9 points indicates mild depression, from 10 to 14 points indicates moderate depression, between 15 and 19 points indicates moderate-severe depression, while a score above 20 points means severe depression. The PHQ-9 has the potential to be a dual-purpose instrument that, with the same 9 items, can establish the diagnosis of depressive disorder as well as the level of severity for depressive symptoms. In less than a decade, the PHQ-9 has become a commonly used instrument by both clinicians and researchers. The level of internal consistency of the PHQ-9 is very high, with a Cronbach α of .89 obtained in the study carried out by the authors in primary care clinics, and .86 in the study carried out in obstetrics-gynecology clinics. Consistently, within the present research, the level of internal consistency is also very high (Cronbach α = .88)

Generalized Anxiety Disorder-7 Scale (GAD-7) is a well-known self-administered instrument used to measure the severity of anxiety symptoms. It was developed in 2006 by the same Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues and comprises seven items developed from the DSM main criteria for generalized anxiety disorder, assessing the following: (1) nervousness, (2) inability not to worry, (3) excessive worry in normal life situations, (4) restlessness, (5) difficulty relaxing, (6) irritability, and (7) fear that something terrible will happen. We identify four severity classes: less than 5 points indicates the absence of anxiety symptoms, between 5 and 9 points shows mild anxiety, from 10 to 14 points results in moderate anxiety, while a score greater than 15 points corresponds to a severe anxiety. In screening for anxiety disorders, a recommended benchmark for further evaluation is a score of 10 points or higher. Although designed primarily as a screening and severity assessment measure for generalized anxiety disorder, GAD-7 has also functional characteristics for other forms of anxiety—panic disorder, social anxiety disorder, and posttraumatic stress disorder. Internal consistency of GAD-7 is excellent (Cronbach α = .92) (Spitzer, Kroenke, Williams, & Löwe, 2006). In the present research, the level of internal consistency is very high (Cronbach α = .914), being very close to the one obtained by the authors. There is, therefore, increasing evidence to support the conclusion that GAD-7 is an effective and valid self-report anxiety instrument for subjects in clinical and nonclinical settings.

PSS-14 - Perceived Stress Scale is the most widely used psychological tool for measuring stress perception. It is a self-reported questionnaire designed to measure "the degree to which individuals rate situations in their lives as stressful" (Cohen, Kamarck , & Mermelstein, 1983). It is not a diagnostic test. High scores indicate high and prolonged stress, which is a risk factor for disease. The PSS-14 was

designed for use in population samples with at least a high-school education. Both questions and answer alternatives are easily to understand. The questions are about the feelings and thoughts encountered during the past month, and respondents have to note how often they felt that way. Two items refer directly to 'stress', three refer to overload situations, while nine items refer to uncontrollable, difficult to manage or unpredictable situations. The interpretation of the results is based on score intervals: between 0 and 14 points a low stress level is registered, between 15 and 28 points the stress level is moderate, between 29 and 42 points it is high, and between 43 and 54 points the stress level is very high. The level of internal consistency obtained in the present research is high (Cronbach $\alpha = .80$), even higher than that the one obtained by the authors (=.75).

4. RESULTS

In accordance to previous studies (Rimmer, 2021) (Batra, Pal Singh, Sharma, Batra, & Schvaneveldt, 2020) (Da Silva & Neto, 2020) (Salazar de Pablo, Brondino, Solmi, & Fusar-Poli, 2020), our analysis by gender showed that women have a higher prevalence of anxiety and depression compared to men (anxiety: 59.6% vs. 29.4%; depression: 51.1% vs. 29.4%). At the same time, it identified higher levels of anxiety and depression among nurses compared to doctors (anxiety: 59.5% vs. 53.7%; depression: 59.5% vs. 33.3%), which may be because nurses have closer and longer contact with patients compared to physicians. Analyzing the prevalence of anxiety and depression according to risk groups, higher levels were identified, as expected, among first-line respondents compared to second-line (anxiety: 69.4% vs. 26.7%; depression: 66.1% vs. 24.6%). The level of perceived stress, although did not register significant differences between groups, was also slightly increased for women, nurses and front-line respondents compared to the other samples (100% female vs. 94.1% male; 100% nurses vs. 96.65% resident and specialist doctors; 100% first line vs. 98% second line).

For *the first hypothesis*, the results obtained from the Pearson correlation test, showed that, between the three analyzed variables, we have statistical significance (p=.001) and high intensity correlations (anxiety vs. depression r=.792; anxiety vs. perceived stress level r=.630; depression vs. stress r=.603). The hypothesis is thus confirmed, and we can conclude that the higher the anxiety, the more the work environment is perceived negatively and stressful, a perception that intensifies when a medium or high level of depression is also manifested. At the same time, the respondents showed an increasingly high levels of anxiety and depression as the work and living conditions become more and more stressful.

If we look *at the second hypothesis*, we notice that, following the application of T-Test for two independent samples, the Levene's Test indicated the assumption of homogeneity of variances in the case of perceived stress (p=.981) and the non-assumption of equality in the case of anxiety (p= .014) and depression (p=.001). Analyzing the T-test, we observe statistical significance for the three analyzed constructs, which confirms the research hypothesis. Therefore, we can say that the

healthcare professionals, especially the front-line ones, suffered emotional trauma during COVID-19 pandemic; their levels of anxiety, depression and perceived stress were significantly higher than the ones from the second line.

The results obtained as a result of the non-parametric U Mann-Whitney test confirmed *the third hypothesis* of the research (anxiety: U = 466, N1 = 17, N2 = 94, Z = -2.733, p = .006; depression: U = 456.5, N1 = 17 , N2 = 94, Z = -2.811, p = .005; stress level: U = 514.5, N1 = 17, N2 = 94, Z = -2.335, p = .020) and, by inspecting the mean ranks for the two gender groups, we can say that women encountered a higher level of stress (59.03 vs. 39.26), anxiety (59.54 vs. 36.41) and depression (59.64 vs. 35.85) compared to men.

Regarding *the fourth hypothesis*, it is observed that, by using the Kruskal-Wallis H test, no statistical significance is obtained for any of the three analyzed dependent variables (Anxiety: $\chi2 = 6.373$, df = 4, p=.173; Depression: $\chi2 = 1.039$, df = 4, p=.904; Stress: $\chi2 = 2.750$, df = 4, p=.600). The hypothesis is not confirmed, so seniority in the medical field has no influence on the anxiety, depression or perceived stress of healthcare workers during COVID-19 pandemic.

In order to test *the fifth hypothesis*, the One-Way ANOVA test with Bonferroni post-hoc analysis was used for each of the three dependent variables. The results show that there is statistical significance only for Depression (Levene p=.031; F = 3.105 and p = 0.049), not for Anxiety (Levene p=.110) and Stress (Levene p=.135). The hypothesis is rejected at the limit. However, from studying the mean values for anxiety, depression and perceived stress, it was observed that nurses were more prone to suffering anxiety and depression than doctors, especially as a result of a higher risk of exposure to COVID-19 patients, while the level of stress was more acute for doctors, as they had to make difficult decisions regarding the patients they treated, especially during the difficult working conditions generated by the pandemic.

Following the results obtained for the five hypotheses detailed above, the following questions were raised: (1) what were the main stress factors that changed the psycho-emotional balance of the medical staff in the context of the COVID-19 pandemic? (2) to what extent did the high levels of stress, anxiety and depression identified by the statistical analysis affect the quality of personal life of healthcare professionals, and professional efficiency and the level of care provided to patients? In order to have a much clearer picture, the need for an additional analysis that also includes this information arose.

(1) Identifying the stressors is important to develop the best individual and organizational interventions that could provide support to healthcare workers, both during the COVID-19 pandemic and during possible future pandemics. It was observed that the highest level of stress was generated by fear of infection (personal and family) (59.46%), closely followed by the overwhelming workload and working conditions (57.66%), lack of social support, discrimination and stigma (55.86%), frequent change of regulations and protocols (54.95%) and patients' death (51.35%).

(2) High levels of stress, anxiety and even depression identified through statistical analysis could have a major impact on the quality of personal and professional life. These aspects have been insufficiently analyzed in similar research.

The quality of personal life was the most affected, in a proportion of 52.3%, while the quality of the medical services provided was impacted to a lower extent (25.2%). The quality of personal life was affected especially by the time spent with the family and friends 61.3%, generating fatigue and sleep disorders 55.0% and irritability 47.7%. The main reason that led to an impairment of professional life (professional efficiency and medical services provided to patients) was a lower level of motivation (25.2%), followed by concentration difficulties (18.9%) and some conflicts arising at the workplace (16.2 %).

5. CONCLUSIONS

The COVID-19 pandemic reminded us, in an acute way, the importance of the work that healthcare personnel do every day.

International studies and meta-analyses show evidence to suggest that a considerable proportion of healthcare professionals have experienced stress, anxiety, depression, sleep disturbances, even burnout and post-traumatic stress during the pandemic, raising concerns about the risks to their mental health.

The results obtained in the present research were consistent with those of international studies (Rimmer, 2021), (Batra, Pal Singh, Sharma, Batra, & Schvaneveldt, 2020), (Da Silva & Neto, 2020), (Salazar de Pablo, Brondino, Solmi, & Fusar-Poli, 2020). It is thus observed that, under the conditions of the COVID-19 pandemic, healthcare professionals experienced high levels of anxiety, depression and stress, especially women and nurses. Also, the higher the probability and intensity of exposure to patients with COVID-19, the higher the risk that medical staff to be affected from a psycho-emotional point of view, suggesting the need for continuous monitoring and proper intervention.

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VOCATIONAL COUNSELING AND ITS INFLUENCE IN CHOOSING THE EDUCATIONAL PATH

OVIDIU-FLORENTIN, FILIP
UPS "Ion Creangă"- Chisinău, Doctoral School of Psychology and Educational Sciences

Abstract

In this research, we aimed to analyze the compatibility between the students' vocational interests and the high school profile (real and human). The importance of this topic derives from the idea that there is a connection between the students' vocational interests and the profile of the chosen high school, and this influences the leve l of self-efficacy. The obtained results indicate that students do not choose their high school profile based on vocational interests, except for realistic type interests, where statistically significant differences were observed. Thus, 60.6% of students with realistic interests chose the science profile, while 39.4% of them chose the human profile. Regarding the vocational interests among students for the science profile, they have the following order: Investigative with an average score of 5.41, realistic with an average score of 4.7 and social with an average score of 4.48. For the human profile, the order of vocational interests is as follows: investigative - 4.88, entrepreneurial - 4.86 and social - 4.77.Regarding the decision-making style, the rational decision-making style was mainly observed in the science profile, with an average score of 13.76, and in the human profile all the rational decision-making style was highlighted, with an average score of 13.7. The intuitive decision-making style followed with an average score of 11.99 for the science profile and 12.7 for the human profile. The results obtained indicate a positive correlation between self-efficacy and rational decision-making style ($r = .39$, $p < 0.01$), while there is a negative correlation between self-efficacy and dependent $r = -.30$ ($p<0.01$) and avoidant $r = -.46$ ($p<0.01$) decision-making styles.

Keywords: *vocational counseling, educational counseling, decisional style, self-efficacy*

1. INTRODUCTION

The present research aims to outline an overview of the current high school environment in Romania. As a general objective, we set out to analyse the compatibility of the students with the profile of the chosen high school.

Corresponding author: Filip Ovidiu-Florentin
E-mail address: filipovidiuflorentin@yahoo.com

The students of the following National Colleges participated in this research: Sfântul Sava, Mihai Viteazul, Spiru Haret, Gheorghe Lazăr and Gheorghe Şincai.

As specific objectives, we aimed to highlight the fact that students choose their high school profile, not in accordance with vocational interests, as well as study the relationship between vocational interests, the choice of high school profile and self-efficacy.

The motivation for choosing this theme consisted in highlighting the need to introduce a vocational counselling program in schools and high schools.

In today's Romanian society, people are poorly informed about the role and importance of vocational counselling, orienting themselves towards careers that do not suit them, which can lead to job dissatisfaction, low performance, stress.

The interest given to this field raises an alarm about the importance of implementing a vocational counselling program in schools and high schools.

The implementation of the vocational counselling program "When we will no longer be children" is a continuation of this study.

In psychology the concept of career has been extensively studied, especially in regard to the way people choose a certain field. In the recent years, the specialty literature has focused on the practice of career development and counseling regarding psychological implications such as self-efficacy, decisional style or personal values (Abele, Spurk, 2009).

Studies show that vocational interests can be defined as crystallized preferences of a person for certain fields of knowledge or activity. According to J. Holland's theory, there are 6 types of interests according to which both people and school/professional environments can be described. The congruence between the person's interests and the chosen school/occupation ensures decision stability in the choice of school/occupation, increases academic/professional satisfaction, ensures better adaptability, superior performance and a low level of stress. (Feldman, 2002; Herr, Cramer & Niles, 2004; Patton & McMahon, 2006).

Studies on self-efficacy show that man tries to control the events that affect his life. This attempt at control is visible in most of the activities undertaken, producing personal and social benefits. Perceived self-efficacy represents people's beliefs about their own abilities needed to achieve goals and fulfill proposed tasks. (Abele, Spurk, 2009; Betz, 2000; Bora, 2003; Ignat, Clipa, 2010; Patrick et. al., 2011).

The decision is considered one of the key elements in career development. Recent researches have established that there are individual differences regarding the evaluation and selection of decision alternatives. These reflect different decision-making styles.

Decision-making styles have different effectiveness depending on the content of the decision. Thus, an intuitive decision-making style can be effective in the case of decisions such as: choosing an activity for spending free time or a book to

be read, and for decisions that have long-term implications, such as: choosing a school, profession, the rational style is the one that has proven to be the most effective. (Bright et.al., 2005; Duffy, Raque Bogdan, 2010; Earl, Bright, 2004; Gunkel et.al., 2010; Pănisoara, Pănisoara, 2010).

The interest given to this field raises an alarm about the importance of implementing a vocational counseling program in schools and high schools. The implementation of the vocational counseling program "When we will no longer be children" is a continuation of this study.

2. OBJECTIVE AND HYPOTHESES

2.1. OBJECTIVE

Main objective: The main objective of the present paper is the analysis of the students' compatibility with the profile of the chosen high school.
Specific objectives: As a specific objective, we set out to highlight the fact that students do not choose their high school profile based on vocational interests. Another objective is to study the relationship between vocational interests, decision-making style and self-efficacy,

2.2. HYPOTHESES

General hypotheses: We assume that the choice of high school profile is not based on the students' vocational interests.
We assume that there is a correlation between the profile of the high school and the decision-making style.
We assume that there is a correlation between the decision-making style and the level of self-efficacy.

Specific hypotheses: We assume that there are no statistically significant differences between the vocational interests of students from the science and human profile.
We assume that realistic, investigative and conventional interests do not predominate in the science profile.
We assume that social, entrepreneurial and artistic interests do not predominate in the human profile.
We assume that students from the science profile predominantly have a rational decision-making style.
We assume that students from the human profile predominantly have an intuitive decision-making style.
We hypothesize that there are gender differences in the degree of self-efficacy.

We assume that there is a correlation between decision-making style and level of self-efficacy.

3. METHOD

The first step when carrying out the current research consisted in studying the specialty literature. Subsequently, the most adequate instruments were chosen in order to measure the studied variables. The chosen groups were asked to fill in the tests according to the following instructions: „Please read carefully the statements included in these surveys and choose the answer that fits you best!" After collecting all the tests, they were scored, and the data were introduced in the database of the statistic programme SPSS, where they were statistically processed with a view to validating the hypotheses of the present research.

3.1. PARTICIPANTS/SUBJECTS

166 participants took part in the research, students of 5 high schools in Bucharest, aged between 17-19 years, male (66 participants) and female (100 participants), 83 students from the science profile and 83 from students from the human profile

3.2 INSTRUMENTS

The CEI24 questionnaire (Cognitrom-Cluj Napoca, 2009) evaluates people's interests, i.e. their crystallized preferences for certain fields of knowledge or activity. This questionnaire consists of 24 items, evenly distributed in six scales. Each scale evaluates a type of interests (more precisely, interests specific to a personality type) from the hexagonal model proposed by J.L. Holland. Each item in CEI24 describes an activity. The respondent must indicate on a scale from 0 to 2 whether he likes the activity, is indifferent or does not like it.

The SES scale of self-efficacy (Schwarzer & Jerusalem, 1995) comprises 10 items and is designed with the aim of assessing a person's convictions regarding its own capacity of dealing with the setbacks encountered during task-solving. The scale was created in 1981 by Matthias Jerusalem and Ralf Schwarzer and so far it has been used in numerous studies and adapted for 33 languages. The SES scale may be said to measure self-efficacy in adapting to everyday problems, confidence in goal-setting, effort investment and perseverance in action.

The Survey Decisional Styles (Gati, Krausz & Osipow, 1996). In order to delineate the participants decisional style, we adapted a survey made up of 5 items, each representing one of the 5 decisional styles, rational, dependent, spontaneous,

intuitive and hesitating. Participants were instructed to read carefully all the five statements and choose the one that fit them best.

4. RESULTS

The obtained results indicate that students do not choose their high school profile based on vocational interests, except for science type interests, where statistically significant differences were observed. Thus, 60.6% of students with science interests chose the science profile, while 39.4% of them chose the human profile. Regarding the vocational interests among students for the science profile, they have the following order: Investigative with an average score of 5.41, realistic with an average score of 4.7 and social with an average score of 4.48. For the human profile, the order of vocational interests is as follows: investigative - 4.88, entrepreneurial - 4.86 and social - 4.77.

Regarding the decision-making style, the rational decision-making style was mainly observed in the science profile, with an average score of 13.76, and in the human profile all the rational decision-making style was highlighted, with an average score of 13.7. It followed the intuitive decision-making style with an average score of 11.99 for the real profile and 12.7 for the human profile.

The rational decision-making style correlates positively with self-efficacy: $r = .39$ ($p<0.01$), the dependent decision-making style correlates negatively with self-efficacy: $r = -.30$ ($p<0.01$), the avoidant decision-making style correlates negatively with self-efficacy: $r = -.46$ ($p<0.01$).

The statistical interpretation of results

Regarding the data analysis in order to confirm the proposed hypotheses, we obtained the following results:

Regarding the hypothesis according to which there are no statistically significant differences between vocational interests from the science and human profile, this is accepted. Only the science interests show statistically significant differences between the real and human profiles: $p =.00$ ($p < 0.05$).

The null hypothesis is rejected and the research hypothesis is accepted. It can be stated that between the science and human profile, the type of interests does not differ from a statistical point of view

Students choose their high school without taking into account their educational preferences. They are usually influenced by parents, teachers or

colleagues in choosing the high school profile, the mathematics-informatics profile being considered a future profile, is the most sought after by students.

Tabel 1-Statistica descriptiva privind profilul liceului si interesele personale

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
realist	4.854	.029	-4.039	164	.000	-1.639	.406	-2.440	-.838
			-4.039	159.261	.000	-1.639	.406	-2.440	-.837
social	.632	.428	.915	164	.361	.289	.316	-.335	.913
			.915	163.589	.361	.289	.316	-.335	.913
investigativ	1.395	.239	-1.525	164	.129	-.530	.348	-1.217	.156
			-1.525	161.919	.129	-.530	.348	-1.217	.157
antreprenorial	.203	.653	1.415	164	.159	.554	.392	-.219	1.327
			1.415	164.000	.159	.554	.392	-.219	1.327
artistic	.198	.657	.452	164	.652	.157	.347	-.528	.841
			.452	163.979	.652	.157	.347	-.528	.841
conventional	.430	.513	-.593	164	.554	-.205	.345	-.887	.477
			-.593	163.606	.554	-.205	.345	-.887	.477

Indicatorii de încredere pentru variabila "Interese"

Statistics

		realist	social	investigativ	antreprenorial	artistic	conventional
N	Valid	166	166	166	166	166	166
	Missing	0	0	0	0	0	0
Mean		3.88	4.63	5.14	4.58	3.78	2.79
Median		4.00	4.00	5.00	5.00	4.00	2.00
Mode		0	4	8	6	4	0
Std. Deviation		2.732	2.034	2.249	2.530	2.228	2.221
Skewness		.070	.042	-.516	-.290	.115	.478
Std. Error of Skewness		.188	.188	.188	.188	.188	.188
Kurtosis		-1.348	-.893	-.649	-1.073	-.774	-.772
Std. Error of Kurtosis		.375	.375	.375	.375	.375	.375
Range		8	8	8	8	8	8
Minimum		0	0	0	0	0	0
Maximum		8	8	8	8	8	8

Investigative and conventional-skewness interests fall within the lower 95% confidence interval with -0.51 and 0.47, respectively. Science, social,

entrepreneurial and artistic interests are found in the large confidence interval, 99%. For science interests: the effect size is 0.62, a very good effect size, here we also obtained statistically significant differences.

The second hypothesis according to which science, investigative and conventional interests do not predominate in the science profile is accepted as follows: Investigative Interests have an average score of 5.41, science an average score of 4.7 and social with an average score of 4.48.

The null hypothesis (H.0.) is rejected and the research hypothesis is accepted. It can be stated that science, investigative and conventional interests do not predominate in the science profile.

The science profile is chosen by the students, for access to the field of IT and medicine. In time, they change their options to other fields in the humanities area: legal, entrepreneurial, etc.

Choosing the right profile can bring greater career satisfaction and increase performance and commitment in professional activity. Therefore, the lack of vocational counselling can lead to decisions made superficially or inappropriately, without a clear understanding of individual potential and preferences.

Tabel 2 -Statistica descriptiva privind profilul liceului si interesele personale

profil_clasa		realist	social	investigativ	antreprenorial	artistic	conventional
uman	Mean	3.06	4.77	4.88	4.86	3.86	2.69
	N	83	83	83	83	83	83
	Std. Deviation	2.830	1.984	2.109	2.524	2.220	2.279
	Sum	254	396	405	403	320	223
	% of Total Sum	39.4%	51.6%	47.4%	53.0%	51.0%	48.2%
	% of Total N	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
real	Mean	4.70	4.48	5.41	4.30	3.70	2.89
	N	83	83	83	83	83	83
	Std. Deviation	2.377	2.086	2.364	2.522	2.246	2.170
	Sum	390	372	449	357	307	240
	% of Total Sum	60.6%	48.4%	52.6%	47.0%	49.0%	51.8%
	% of Total N	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Total	Mean	3.88	4.63	5.14	4.58	3.78	2.79
	N	166	166	166	166	166	166
	Std. Deviation	2.732	2.034	2.249	2.530	2.228	2.221
	Sum	644	768	854	760	627	463
	% of Total Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total N	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The third hypothesis according to which social, entrepreneurial and artistic interests do not predominate in the human profile is accepted as follows: investigative interests - 4.88, entrepreneurial - 4.86 and social - 4.77.

The null hypothesis (H.0.) is rejected and the research hypothesis is accepted. It can be stated that investigative, entrepreneurial and social interests do not predominate in the human profile.

The similar distribution of the scores obtained by the students on the types of interests indicates a lack of vocational counselling among them. Vocational counselling is an essential process in students' personal development, as it helps them explore and better understand their interests and aptitudes. This means they can more clearly identify their personal strengths, passions and values, as well as areas in which they could develop and be professionally satisfied.

Tabel 2 -Statistica descriptiva privind profilul liceului si interesele personale

profil_clasa		realist	social	investigativ	antreprenorial	artistic	conventional
uman	Mean	3.06	4.77	4.88	4.86	3.86	2.69
	N	83	83	83	83	83	83
	Std. Deviation	2.830	1.984	2.109	2.524	2.220	2.279
	Sum	254	396	405	403	320	223
	% of Total Sum	39.4%	51.6%	47.4%	53.0%	51.0%	48.2%
	% of Total N	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
real	Mean	4.70	4.48	5.41	4.30	3.70	2.89
	N	83	83	83	83	83	83
	Std. Deviation	2.377	2.086	2.364	2.522	2.246	2.170
	Sum	390	372	449	357	307	240
	% of Total Sum	60.6%	48.4%	52.6%	47.0%	49.0%	51.8%
	% of Total N	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Total	Mean	3.88	4.63	5.14	4.58	3.78	2.79
	N	166	166	166	166	166	166
	Std. Deviation	2.732	2.034	2.249	2.530	2.228	2.221
	Sum	644	768	854	760	627	463
	% of Total Sum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total N	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The fourth hypothesis according to which students from the science profile mainly have a rational decision-making style is accepted, with an average score of 13.7.

The null hypothesis (H.0.) is rejected and the research hypothesis is accepted. It can be stated that in the science profile, students predominantly have a rational decision-making style.

The rational decision-making style refers to the approach to decision-making based on logical reasoning and objective analysis of available information. This decision-making style involves going through a structured and rational process in which options are evaluated and compared, the associated risks and benefits are analysed, and clearly defined criteria and objectives are considered. This way of thinking is specific to the science profile and is expected to be predominant in this profile.

Tabel 3-Statistica descriptiva privind profilul liceului si stilul decizional al elevului

profil_clasa		stil_decizional_ rational	stil_decizional_ dependent	stil_decizional_ evitant	stil_decizional_ intuitiv	stil_decizional_ spontan
uman	Mean	13.70	10.81	8.87	12.70	9.39
	N	83	83	83	83	83
	Std. Deviation	1.872	2.437	2.699	1.992	2.439
	Sum	1137	897	736	1054	779
	% of Total Sum	49.9%	49.2%	48.8%	51.4%	51.2%
	% of Total N	50.0%	50.0%	50.0%	50.0%	50.0%
real	Mean	13.76	11.17	9.31	11.99	8.94
	N	83	83	83	83	83
	Std. Deviation	2.022	2.352	2.785	2.045	2.297
	Sum	1142	927	773	995	742
	% of Total Sum	50.1%	50.8%	51.2%	48.6%	48.8%
	% of Total N	50.0%	50.0%	50.0%	50.0%	50.0%
Total	Mean	13.73	10.99	9.09	12.34	9.16
	N	166	166	166	166	166
	Std. Deviation	1.943	2.394	2.743	2.044	2.372
	Sum	2279	1824	1509	2049	1521
	% of Total Sum	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total N	100.0%	100.0%	100.0%	100.0%	100.0%

Indicatorii de incredere pentru variabila "Stilul decizional"

Statistics

Stilul decizional

N	Valid	166
	Missing	0
Mean		55.31
Median		55.00
Mode		53
Std. Deviation		5.133
Skewness		**.114**
Std. Error of Skewness		.188
Kurtosis		**1.095**
Std. Error of Kurtosis		.375
Range		35
Minimum		37
Maximum		72

The value of the obliquity coefficient of Skewness is 0.11 and the value of the standard error of Skewness is 0.18. The confidence interval at a 99% precision level is between - 0.42... + 0.42, and at a 95% precision level it is between – 0.84 ... + 0.84. We can easily see that the value of the Skewness coefficient (0.11) falls into the first range as well as the second range. We can therefore say, with less than 1% chance that our distribution behaves asymmetric, so we are dealing with a symmetric distribution.

The Kurtosis coefficient value is 1.09 and the Kurtosis standard error value is 0.37. The confidence interval at a 99% accuracy level is between – 0.83 ... + 0.83, and at a 95% accuracy level it is between – 1.66 ... + 1.66. We can see that the value of the Kurtosis coefficient (1.09) falls into the second interval (with lower precision), but not in the first interval (high precision). The accepted level of precision is above 95%, so our distribution can be considered a mesokurtic distribution.

Hypothesis five, according to which students from the human profile predominantly have an intuitive decision-making style, is rejected: the rational decision-making style is predominant with an average score of 13.7.

The null hypothesis (H.0.) is accepted and the research hypothesis is rejected. It cannot be asserted that in terms of the human profile, students predominantly have an intuitive decision-making style.

The similar distribution of the scores obtained by the students on the types of interests, between the science and the human profile, is also evident in the decision-making style. Although the intuitive decision-making style would have been specific to the human profile, we do not see significant differences between the decision-making styles.

Tabel 3-Statistica descriptiva privind profilul liceului si stilul decizional al elevului

profil_clasa		stil_decizional_ rational	stil_decizional_ dependent	stil_decizional_ evitant	stil_decizional_ intuitiv	stil_decizional_ spontan
uman	Mean	13.70	10.81	8.87	12.70	9.39
	N	83	83	83	83	83
	Std. Deviation	1.872	2.437	2.699	1.992	2.439
	Sum	1137	897	736	1054	779
	% of Total Sum	49.9%	49.2%	48.8%	51.4%	51.2%
	% of Total N	50.0%	50.0%	50.0%	50.0%	50.0%
real	Mean	13.76	11.17	9.31	11.99	8.94
	N	83	83	83	83	83
	Std. Deviation	2.022	2.352	2.785	2.045	2.297
	Sum	1142	927	773	995	742
	% of Total Sum	50.1%	50.8%	51.2%	48.6%	48.8%
	% of Total N	50.0%	50.0%	50.0%	50.0%	50.0%
Total	Mean	13.73	10.99	9.09	12.34	9.16
	N	166	166	166	166	166
	Std. Deviation	1.943	2.394	2.743	2.044	2.372
	Sum	2279	1824	1509	2049	1521
	% of Total Sum	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total N	100.0%	100.0%	100.0%	100.0%	100.0%

Indicatorii de incredere pentru variabila autoeficacitate

N	Valid	166
	Missing	0
Mean		32.75
Median		33.00
Mode		32
Std. Deviation		4.742
Skewness		-.382
Std. Error of Skewness		.188
Kurtosis		-.131
Std. Error of Kurtosis		.375
Range		23
Minimum		17
Maximum		40

The value of the Skewness coefficients of -0.38 and Kurtosis -0.13, places us in the 99% confidence interval.

Hypothesis six, according to which there are differences in the degree of self-efficacy according to gender, is rejected: $p = 0.23$ ($p > 0.05$).

The null hypothesis (H.0.) is accepted and the research hypothesis is rejected. It cannot be stated that there are differences in the degree of self-efficacy depending on gender.

Self-efficacy refers to confidence in one's ability to successfully complete a task or achieve one's goals. It is important to note that self-efficacy is a subjective experience and may vary depending on its domain. For example, a person may have high confidence in their abilities in a specific domain, such as math, but have low confidence in their abilities in another domain, such as music.

The lack of self-knowledge is found to the same extent in male students as in female students.

Tabel 4-Asocieri intre autoeficacitate si gen

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
autoeficacitate_total	1.452	230	-1.182	164	.239	-.888	.751	-2.371	.595
			-1.229	155.960	.221	-.888	.722	-2.315	.539

The seventh hypothesis, according to which there is a correlation between the decision-making style and the level of self-efficacy, is accepted: The rational decision-making style correlates positively with self-efficacy: r = .39 ($p<0.01$), the dependent decision-making style correlates negatively with self-efficacy: r = -.30 ($p<0.01$), the avoidant decision-making style correlates negatively with self-efficacy: r = -.46 ($p<0.01$).

The null hypothesis (H.0.) is rejected and the research hypothesis is accepted. It can be stated that there is a correlation between the decision-making style and the level of self-efficacy.

The rational decision-making style involves making decisions based on logical reasoning, objective analysis, and careful evaluation of available information. This rational process can increase confidence and trust in your own decision-making abilities.

It is important to note that self-efficacy can also influence a person's decision-making style. Individuals who are confident in their own abilities and competencies may be more likely to use a rational decision-making style because they feel comfortable making decisions and taking responsibility for them.

Tabel 5-Asocieri intre stilul decizional si autoeficacitate

		autoeficacitate_total	stil_decizional_rational	stil_decizional_dependent	stil_decizional_evitant	stil_decizional_intuitiv	stil_decizional_spontan
autoeficacitate_total	Pearson Correlation	1	.393**	-.300**	-.462**	.285**	.109
	Sig. (2-tailed)		.000	.000	.000	.000	.164
	N	166	166	166	166	166	166
stil_decizional_rational	Pearson Correlation	.393**	1	-.055	-.164*	.127	-.217**
	Sig. (2-tailed)	.000		.478	.035	.102	.005
	N	166	166	166	166	166	166
stil_decizional_dependent	Pearson Correlation	-.300**	-.055	1	.401**	-.127	-.153*
	Sig. (2-tailed)	.000	.478		.000	.104	.049
	N	166	166	166	166	166	166
stil_decizional_evitant	Pearson Correlation	-.462**	-.164*	.401**	1	-.107	-.105
	Sig. (2-tailed)	.000	.035	.000		.169	.179
	N	166	166	166	166	166	166
stil_decizional_intuitiv	Pearson Correlation	.285**	.127	-.127	-.107	1	.313**
	Sig. (2-tailed)	.000	.102	.104	.169		.000
	N	166	166	166	166	166	166
stil_decizional_spontan	Pearson Correlation	.109	-.217**	-.153*	-.105	.313**	1
	Sig. (2-tailed)	.164	.005	.049	.179	.000	
	N	166	166	166	166	166	166

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Rational decision-making style and self-efficacy – effect size: 0.15 (small effect size)
Dependent decision-making style and self-efficacy – effect size: 0.09 (small effect size)
Avoidant decision-making style and self-efficacy – effect size: 0.21 (small effect size)

5. CONCLUSIONS

This research highlights the importance of compatibility between students' vocational interests and the profile of the chosen high school. It has been found that most students do not choose their high school profile according to their vocational interests, which can affect their academic performance, lead to difficulties in reaching their maximum potential and lack of motivation (Athanasou, J.A., Van Esbroeck, R. 2007).

Regarding decision-making style, rational decision-making style was found to correlate positively with students' self-efficacy.

Without vocational guidance, students may be unsure about their educational and career path. They may feel pressured to make important decisions without having enough information or support to make well-informed decisions (Bergeron, L. M., & Romano, J. L. 1994)

Students can be influenced by factors such as social pressure or choosing a popular career path over their real interests and aptitudes (Bergeron, L. M., & Romano, J. L. 1994). This leads in the long term to university dropout, frequent job changes and burnout (Abele, A.E., Spurk, D. 2009).

Vocational counselling provides students with access to up-to-date information about various career fields, their requirements, and educational opportunities (Bright, J.E.H., Pryor, R.G.L., Harpham, L. 2005). Lack of this information can lead to a shallow understanding of the job market and the various career options available.

Vocational guidance is not limited to choosing a career, but also involves developing the skills necessary for success in that field (Chen, G., Gully, S.M., Whiteman, J.A., Kilcullen, B.N. 2000).

In conclusion, we believe it is important to pay attention to vocational guidance and provide adequate support to students in exploring and confidently choosing a suitable educational path.

The contribution brought by this research is given by highlighting the fact that students choose their high school profile, without taking vocational interests into account. This fact leads to lack of motivation, low performance and stress.

These results led to the creation of the vocational counseling program "When we will no longer be children", which we implement in schools and high schools, in the 7th and 11th grades, through which we monitor the decrease in university dropouts as well as the increase in the number by specialists on the labor market and the reduction of occupational stress.

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PRINCIPLES AND METHODS OF FORMING A POSITIVE IMAGE OF SEXUALITY IN OLD AGE

SVETLANA TOLSTAIA [a]
[a] *Moldova State University, Faculty of Psychology, Educational Sciences, Department of Psychology*
MARINA SLAVINSKI [b]
[b] *Moldova State University, Faculty of Psychology, Educational Sciences, Doctoral School of Social and Educational Sciences*

Abstract

Gerontology, due to social taboos, largely ignores the importance of the sexual-erotic aspect of the life of older people. Negative age stereotypes can lead to age discrimination, also known as ageism. As a result, older people are often denied the right to sexual activity, perpetuating the construction of old age through the mechanisms of control over sexuality. Ageist stereotypes associated with sexuality in old age can significantly affect the quality of life, psychological well-being and self-esteem of older people.

In this article, the development of a training program is explored, which seeks to cultivate a positive outlook on sexuality amongst the elderly. The program delves into psychosexual issues related to old age, with a particular emphasis on fostering a more positive attitude towards sexuality by addressing factors such as body image, sexual health and behavior in old age. The content of this training focuses older people on the legitimation of the topic of sexuality in old age, openness and the possibility of dialogue on the topic.

Keywords: *sexuality, psychosexual issues, old age, ageism*

1. INTRODUCTION

Sexuality, intimacy, and sexual relationships are not only basic human needs and rights, but also crucial for maintaining mental and physical health at any age. However, society has long held a taboo on discussing sexuality in the elderly, with relevant literature and discourse only emerging in recent times. According to Akimova (2005), *sexuality* is a set of mental and physiological reactions, experiences, and actions. It is an integral part of human life, present from birth to death, and contributes to feelings of love, intimacy, self-confidence, and joy. Psychosomatically, sexuality represents a unique non-verbal form of communication that conveys passion, affection, trust, security, and satisfaction, making it indispensable in interpersonal relationships. Regrettably, social gerontology has largely ignored the importance of the sexual-erotic dimension of older adults' lives

[a] *Associate Professor, PhD in Psychology, Moldova State University, tolstaiasv@gmail.com*
[b] *PhD student at Doctoral School of Social and Educational Sciences, Moldova State University, marinaslavinski@gmail.com*

due to societal taboos. Consequently, insufficient attention has been given to promoting a positive outlook on sexuality in old age and exploring this topic. The continuing taboo on the topic of sexuality in old age stems from ageist stereotypes, which unfortunately affect both the elderly themselves and the specialists who work with them such as gerontologists, nurses, social and patronage workers, psychologists. Negative age stereotypes can lead to age discrimination, also known as ageism. Studies have shown that older adults internalize negative stereotypes, which can negatively impact their physical, cognitive, and psychological health (Bodrug-Lungu, Sevciuc, 2018). As a result, older adults are often denied the right to sexual activity, perpetuating the construction of old age through the mechanisms of control over sexuality. Ageist stereotypes related to sexuality in old age can significantly impact the quality of life, psychological well-being, and self-esteem of older individuals (Balode, Grecu-Stavila, 2020). Sexual stereotypes about old age are unfortunately internalized by the elderly themselves, leading to negative impacts on their behavior and psychological well-being. These attitudes, which are both misleading and damaging, often cause older people to reject their needs and abilities. This can result in a loss of self-confidence, the suppression of erotic feelings, and a reluctance to seek out contact, love, warmth, and intimacy.

There is an unmet need to promote realistic views on sexuality in older age, challenge ageist perceptions, and to enable older persons to express their sexuality and sexual identity freely and fully. In the review and analysis of scientific literature on the topic, we noticed the lack of training methods for developing a positive image of sexuality in old age. Training programs on sexuality and psychotherapeutic techniques are often designed for adolescents and adults, making them irrelevant and inappropriate for the elderly. Nevertheless, practitioners working with older people have observed that sexuality remains a pressing concern for many individuals over 60 years old (Agarcov, 2011). As the global population continues to age, it is critical for specialists to promote high-quality, psychologically fulfilling lives for older people, who can remain socially active and valuable members of society. To address this gap, we developed an original training program entitled "Formation of a positive image of sexuality in old age" that integrates specific principles for addressing sexuality and psychological well-being in older people.

2. THE THEORETICAL FRAMEWORK

The training program, "Formation of a positive image of sexuality", is based on the humanistic psychology concept of psychological well-being by Ryff (2014) and the conceptual understanding of sexuality in old age (DeLamater, 2012).

According to the theory of Ryff (1995), the concept of "psychological well-being" is defined as an integral indicator of the degree of a person's orientation towards the implementation of the main components of positive functioning, as the degree of realization of this orientation, subjectively expressed in a feeling of happiness, satisfaction with oneself and one's own life. According to Ryff (2014), the selected components of psychological well-being correlate with various

structural elements of theories, in which one way or another we are talking about the positive functioning of the individual.

In our opinion, intimate relationships and sexual satisfaction are one of the important components of happiness and a source of positive emotions. As a result of an increase in the level of psychological well-being, a person develops a more positive outlook on himself and his life, thereby increasing faith in his abilities and in planning his life. It is worth noting that this matters not only for a particular person, for his self-feeling of happiness and satisfaction with his life, but also for society as a whole, since the more people are satisfied with their lives and at the same time function positively, the lower the psycho-emotional stress will be. in society.

Along with a positive body image, we propose to introduce the concept of a positive image of sexuality in old age. Body image is a person's perception of their own body. Those feelings, sensations and emotions that he experiences in relation to his own body. In turn, a positive body image is not just a knowledge of where and what is, but also an understanding of the attractiveness of your body to others. Recently, within the framework of the concepts of positive psychology, a new and increasingly popular direction in psychology, a new approach to the study of body image has emerged, contributing to a shift in emphasis from the negative aspects of the body image to the positive (Tylka & Wood-Barcalow, 2015). In society and among the representatives of the elderly group, often negative ideas about their sexuality are common. This is due to numerous taboos and clichés: "sex is only for the young", "older people do not have sex", "sex is only needed for childbearing", etc. Thus, in contrast to negative ideas about sexuality in old age, we propose to consider a positive image of sexuality in old age.

Undoubtedly, there are factors that influence the image of sexuality in old age. One of the factors influencing the idea of sexuality in old age is his personality. If a person was previously quite sexually active, then in old age there is a high probability that he will remain sexual. Thus, sexuality in adulthood must be considered in the context of each person's personality.

A positive image of sexuality in old age is an understanding of one's sexuality as a combination of a positive attitude towards the body as an instrument of sexuality, active sexual behavior and a subjective understanding that a person can be a sexual object at any age.

3. OBJECTIVE AND HYPOTHESES

3.1. OBJECTIVE

In order to form a positive attitude to sexuality in old age, we have developed a training program. The developed training program for the formation of a positive image of sexuality in old age is aimed at solving the following tasks: expanding knowledge about the peculiarities of sexual health in old age; formation of knowledge about the concept of psychological well-being among training participants; formation of aspiration for self-discovery, immersion in their inner world and orientation in it; formation of a positive image of the body in old age; expansion of ideas about sexual behavior and sexuality in old age. The goal of our

training is to change as much as possible the negative attitudes and ideas of older people about sexuality in the golden age.

3.2. HYPOTHESES

The hypothesis of the formative part of the study is the assumption that a targeted impact on the idea of sexuality, in order to form a positive image of sexuality in old age, contributes to an increase in the level of psychological well-being of older people.

4. METHOD

The selected form of work in the training - group work - seemed to be the most effective for achieving the set goals in training sessions with small groups under the guidance of a psychologist. Interaction in a group is much more intense and varied than in individual therapy. Accordingly, the emotional experience is much richer. As a result, it significantly reduces the duration of exposure to obtain the maximum expected result. In a group, members receive feedback from other members of the group, which in itself is very valuable.

The advantage of group therapy is the opportunity to open up, interacting with other participants, to better understand yourself to raise self-esteem and self-confidence. The tension in the group helps to solve psychological problems when a special atmosphere is formed between the participants in the process of work. Paradoxically, the member benefits from the group even if he is silent or helps the other members solve their problems. He adopts someone else's experience, shares his own experience, which increases his self-esteem, learns constructive ways of communication from others, and does a lot of other extremely important and valuable things.

We believe that within the framework of training training technologies, as well as based on the model of sexuality in old age developed by us, it is possible to form positive ideas about one's own sexuality in old age, which in turn contributes to an increase in the level of psychological well-being.

The specifics of building a training on the topic of sexuality. After analyzing the available practical classes on the topic of sexuality, we made the following conclusions on the construction of the training:

1. At the initial stage of work, it is imperative to discuss and accept the rules of group work: confidentiality, respect for each other, I-messages, non-judgmental, etc.

2. It is important to assess the risks in your work: the sufficiency of time, the analysis of the composition of participants and possible difficulties, the experience of group work, the facilitator's own traumatic experiences on the stated topic, etc.

3. It must be understood that the topic of sexuality contributes to a rapid immersion in an intimate, personal process of experiencing relationships with another, which brings to the surface of consciousness complex memories, emotions and, possibly, painful feelings. The facilitator should be aware that he may have to work with clients' traumatic experiences.

The specifics of building training for the elderly. It must be borne in mind that

with age, older people can become more vulnerable and sometimes withdraw into themselves. With age, there may be a containment of one's own experiences, resentments and emotions that have not been properly responded to and processed properly. All this is likely to have a negative impact on the general health of an elderly person and psychological well-being.

Psychological exercises for the elderly are aimed primarily at relieving internal stress. Their main purpose is to create the most comfortable emotional background, the joy of life, curiosity and the desire to communicate. In working with people of late ages, it is necessary to apply specific methods that would reflect the structure of emotional experiences characteristic of a given period of ontogenesis.

The developed training program consists of 3 blocks.

1. Introductory block. The purpose of this introductory stage is to get the group members acquainted with each other, establish an informal style of communication, create favorable conditions for working in the group, clarify the rules and other organizational issues, as well as prepare participants for the main training block. In the process of passing through this stage, exercises aimed at organizing acquaintance and creating a favorable atmosphere in the group, familiarization with the topic of the training, as well as exercises aimed at working with the expectations of the participants were used. To achieve the goal in this training block, various exercises were used, including those proposed by the author. For example, *Exercise "Leaf of well-being"*.

Description of the exercise.

Time: 40 min.

Purpose: formation of knowledge among the participants of the training about the concept of psychological well-being and sexuality.

Materials: hat, paper, pens, board, markers.

Instruction: each of the participants receives a blank sheet, in which he himself must think over and write down from 3 to 5 concepts for 5 minutes, which, in his opinion, constitute the concept of psychological well-being.

Discussion: Participants put their lists in a header. The leader of the training randomly extracts someone's list, reads it out and writes the concepts on the board (breaking them into conditional topics: health, financial situation, knowledge, travel, etc.). As a result of the exercise, a conceptual tree for the term psychological well-being will appear on the board. Each of the participants has the right to supplement the resulting list.

2. Main block. At this stage, the main psychological work is carried out, aimed at mastering the knowledge by the participants of the training on the topic of sexuality in old age and the formation of a positive image of sexuality in old age. According to our study, four factors are important for the formation of a positive image of sexuality in old age: changing stereotypes about sexuality, sexuality and sexual health, sexual behavior and attitude towards the body. To solve the problems of this stage, we also developed some exercises and techniques. In particular:

1. *Exercise: "Collage. Stereotypes in reverse"*

Time: 35 min.

Purpose: the participants' awareness of the influence of stereotypes about old

age on the sexual sphere of older people, the loosening of generally accepted stereotypes in society about the sexual sphere of older people.

Materials: old illustrated magazines with lots of pictures, scissors, glue, markers, felt-tip pens, drawing paper.

Instructions: Group members are divided into 3 groups. The facilitator gives the group members a list with the main ageist stereotypes associated with sexuality in old age.

Sample list:

- Sex and love are the prerogative of the young
- Sex can be harmful to health in old age
- Older body can't be sexy
- Sexual desire decreases with age
- The main social role of an elderly person is grandparents
- A man at any age should be the initiator of sexual intimacy
- For a successful sexual life, a man needs a young partner
- In old age it is impossible to find a partner

The task of the participants is to choose any stereotypes from the list and illustrate them using a collage. The content of the collage should be opposite in meaning to the stereotype chosen by them (i.e., illustrate a non-stereotype, and show a different picture - an "anti-stereotype".) At the end of the exercise, each group demonstrates the result of their work and there is a joint discussion.

2. *Exercise: "Sculpture of my sexuality"*

Time: 45 min.

Materials: colored plasticine.

Purpose: removal of emotional and behavioral enslavement in relation to one's own sexuality.

Instructions: This exercise consists of three stages.

The first is that the participants choose the color or colors of the plasticine and must mold it into a figure that would most fully reflect their idea of their sexuality.

The second - the participant shows the group his figure, describes it. Then the whole group proposes a name for the composition.

The third is a discussion of the diversity of the obtained "sculptures about sexuality", the search for common and different, the construction of a "collective sculpture of sexuality".

3. *Exercise "Blow of the Wind"*

Time: 25 min.

Materials: basket, light colored scarves, music.

Purpose: bodily liberation of group members.

Instructions: The exercise consists of two parts.

This exercise is accompanied by musical accompaniment.

First part: participants choose one scarf from the basket. Then everyone should greet the rest of the participants without words, but with some gesture, movement, using a handkerchief.

Second part: participants are asked to come up with one or more movements that would reflect their sexual attractiveness. A movement that answers the question:

"How can I show my attractiveness? How can / can I attract the attention of a partner?". Then each of the group members should show this movement in front of the group (it is possible to use it from the handkerchief from the first part of the exercise).

Completion: all participants share their emotions and impressions. A possible question for discussion is "Can you do it in society, in another place?"

4. *Exercise: "Profile in a social network"*

Time: 30 min.

Materials: sheets of A4 paper, colored markers, pencils, pen, board, stickers.

Purpose: to introduce participants to the possibilities of communication and new acquaintances in social networks.

Instruction: participants are invited to create and fill out a personal page on a social network, which would reflect the most important information about themselves, in their opinion. It can be both formal and informal data.

For example: first name and last name, or only the first name that is preferred; area of activity or hobbies; personal contacts (e-mail, phone) at will; a personal slogan or phrase that most clearly reflects personal beliefs, any other thoughts, words, ideas that are important to the participant.

The resulting profiles can be hung on the walls around the entire perimeter of the room and invite the group to: familiarize themselves with the profiles of other participants (s); put a "like" by drawing a symbol in the form of a heart or using self-adhesive stickers; leave comments. At the end of the intragroup discussion.

Recommendations to the coaching team: draw the attention of participants to issues related to the preservation and dissemination of personal information. If someone does not want to provide personal contacts, he may not do so.

5. *Exercise: "Recommendations from the elderly to the Ministry of Health"*

Time: 25 min.

Materials: sheets of A4 paper, pencils, pens, markers, board.

Purpose: to expand the understanding of sexual health among older people and the role of government agencies in this area.

Instructions: Team members receive blank sheets of paper and within 10 minutes must develop recommendations for the Ministry of Health on how to improve sexual health services for older people. Then the participants are divided into two groups and develop a common list of recommendations.

At the end, both groups present their recommendations, and the facilitator combines the ideas into a single program.

3. Final block. The main goal of the final block is the emotional completion of the training process, receiving feedback from the participants of the training. This stage of work with the group is important, since it is at this stage that the results of the work are summarized, the acquired skills are clarified and integrated. We used, for example, such exercises:

1. *Exercise "Suitcase, basket, meat grinder"* (Gorbushina, 2008)

Time: 15 min.

Purpose: summarizing the lesson.

Materials: sheets of large format paper, multi-colored leaves, felt-tip pens,

adhesive tape.

Instruction: Participants are offered three large sheets, on one of which a huge suitcase is drawn, on the second - a wastebasket and on the third - a meat grinder. On a yellow piece of paper, which is then glued to a poster with a picture of a suitcase, it is necessary to draw (write) that important point that the participant learned from work (in a group, in class), is ready to take with him and use in his life.

On a blue piece of paper - what turned out to be unnecessary, useless and what can be sent to the "trash can", that is, attached to the second poster.

A gray sheet is something that turned out to be interesting, but not yet ready for use in your life. Thus, what needs to be thought out, finalized, “finished up” is sent to the “meat grinder”, that is, attached to the third poster.

The leaflets are written anonymously and, as soon as they are ready, are glued by the participants themselves. Then there is a general discussion.

5. RESULTS

The experimental group consisted of 16 cognitively intact, heterosexual elderly people living in Israel (11 women and 5 men), from three age subgroups: 5 participants (1 man and 4 women) aged 62-71 years: 6 participants (2 men and 4 women) aged 72-79 years, 5 participants (2 men and 3 women) over 80 years old. The average age of the participants in the experimental group was 72.6 years.

At the first stage of the analysis of the effectiveness of the training program, a repeated diagnosis of the characteristics of sexuality and psychological well-being was carried out among the participants in the experimental group. The participants were tested according to the same diagnostic scheme as in the ascertaining experiment: the study of the characteristics of sexuality (the questionnaire "Features of the sexuality of people 60+") and the subjective feeling of psychological well-being (the Ryff test).

Analyzing the quantitative results of the questionnaire "Features of the sexuality of people 60+" before and after the experiment, it can be noted that in the experimental group there were positive changes in the level of severity of the studied parameter.

Checking the significance of the observed differences, carried out using the Student's T-test, showed that on all scales of the questionnaire, the differences before and after the experiment in the experimental group were significant (Table 1).

Table 1 – The results of the T-test to the questionnaire "Features of the sexuality of people 60+" (before and after the experiment)

Test	**Re-test**	**T-test**	**Significance level, p**	**Scale**
3,96	4,53	-5,084	0,00	Stereotype about sexuality
3,43	3,77	-6,928	0,00	Sexual behavior
3,76	4,15	-6,333	0,00	Sexual health
3,86	4,09	-3,563	0,05	Attitude to the body
3,37	4,68	-9,838	0,00	General sexuality

Let us consider the results of the questionnaire "Psychological well-being" in the experimental group before and after the experiment. Checking the significance of observed differences using Student's t-test showed that for 4 out of 6 parameters of the questionnaire the differences before and after the training in the experimental group were significant, and for the rest there is a tendency to improve the indicators (Table 2.).

Table 2 – The results of the T-test to the questionnaire "Psychological well-being" (before and after the experiment)

Test	**Re-test**	**T-test**	**Significance level, p**	**Scale**
63,0	64,3	-1,890	0,078	Positive relationship
59,1	59,6	-1,145	0,270	Autonomy
59,1	60,7	-3,058	0,05	Environment management
55,5	57,6	-3,232	0,05	Personal growth
55,8	57,8	-2,717	0,05	Goals
61,2	62,7	-2,234	0,05	Self-acceptance
353,5	362,68	-3,478	0,05	Integral indicator

The changes that have taken place in the average indicators indicate that participation in the program for the formation of a positive image of sexuality in old age had a positive effect on the level of psychological well-being of the participants in the experimental study, which is statistically confirmed (Table 2). We can note that the level of the “Personal Growth” scale significantly increased in the elderly from the experimental group ($t=-3,232$ at $p\leq0,05$), which indicates that the training participants felt the strength and desire to develop, gain new experience. In addition, they had new goals in life ($t = -2,717$ at $p\leq0,05$) - participation in the training allowed them to take a fresh look at their own lives and see in it not only lost opportunities, but also potential. New ways of building relationships with a partner and dealing with their own sexuality allowed older people to comprehend the experience and build new life strategies. This is also reflected in the new opportunities to manage the environment ($t=-3,058$ at $p\leq0,05$) – older people felt that they could change the existing order of their lives for the better and could create conditions suitable for meeting their personal needs. It can also be noted that after participating in the training program, the results of the “Self-acceptance” scale increased in older people ($t = -2,324$ at $p\leq0,05$), which indicates that the work on the formation of a positive image of sexuality has also influenced the general self-concept. Older people began to feel more positive about themselves, learned to see and highlight their positive qualities and blame themselves less for the presence of negative qualities.

The results of statistical analysis also demonstrate the presence of significant differences in the overall level of psychological well-being in the experimental group before and after the experiment. And despite the fact that this level does not go beyond the average level of psychological well-being, according to the interpretation of the diagnostic methodology, we still see a significant increase in this indicator after the formative experiment ($t=-3,478$ at $p\leq0.05$). Thus, we can conclude that

participation in the formative experiment program had a positive impact on the level of general psychological well-being of older people.

6. CONCLUSIONS

Discourses about aging are based on the assertion that with age, abilities decrease, desires disappear, skills are lost, and aging is socially assessed as degradation and defeat of a person, which creates stereotypes that stigmatize and marginalize older people. However, older people have their own understanding of aging and give it their own meaning, different from that which prevails in society. Themes such as sexuality, intimacy, emotionality and sensuality cannot be evaluated in the same way at different periods of the human life cycle. Elderly people have their own meanings and values, including those regarding sexual relations.

According to the European Programme of Work "United Action for Better Health" (WHO, 2021), adults who manage their lives have great potential to participate in the economic and social life of society and, accordingly, can lead an active life position. Sexual health can indeed be used as one of the indicators of positive health trends contributing to the achievement of the main goal of Health. However, in modern research, there is not enough research on the sexual sphere of older people. This is partly due to the fact that studies of the elderly group in the field of sexual health of the population have not yet been a priority problem, since aging is often seen as a process that is more associated with problems, shortcomings and taboos, that is, as the final involutive period of life than as a complete and significant part of the life cycle. In addition, sexuality and sexual relations are the driving force behind the social activity of a person at any age, since it is aimed at achieving not only sexual satisfaction, but also positive emotions and psychological well-being.

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INNOVATION FOR ALL: UNLEASHING THE POWER OF ASSISTIVE TECHNOLOGY IN SPECIAL EDUCATION IN ARABIC SPEAKING COUNTRIES

MONA SALEH ALANAZI [a]
[a] *Northern Border University, Faculty of Arts & Sciences, Department of Education*

Abstract

In this study, we look at how special education teachers are increasingly using assistive technology (AT) to help children with disabilities. Our research focuses on the available literature on AT implementation in special education in Arabic-speaking nations. Our analysis includes a look at the advantages, disadvantages, and prospective applications of AT in this setting. The study's findings shed light on a number of major topics that emerge from the literature. For starters, it highlights the importance of personalised and student-centered methods to AT implementation. Recognizing each student's unique needs and abilities means that AT interventions are personalized to optimize their impact. Furthermore, the study emphasizes the vital relevance of providing adequate training and continuous support to both teachers and students who use AT. Adequate training provides educators with the skills and knowledge needed to properly apply AT, while continual support ensures its continued effectiveness in the classroom. Furthermore, the evidence demonstrates AT's tremendous potential to improve outcomes across a wide range of academic and functional areas. Students can overcome barriers, learn key skills, and actively participate in their educational path by utilizing AT technologies. Finally, this paper explores the implications of these findings for future special education research and practice. The findings of the literature study serve as a platform for future research and show the importance of continuing to investigate the influence of AT on students with disabilities in Arabic-speaking nations. This study adds to the growing body of knowledge about assistive technology in special education, particularly in Arabic-speaking countries. It is a great resource for educators, policymakers, and researchers, emphasizing the significance of student-centered approaches, training, and the potential of AT to improve results for students with disabilities.

Keywords: *Assistive technology, special education, middle east, Arabic-speaking countries.*

1. INTRODUCTION

Assistive technology (AT, hereafter) has become an increasingly important tool in the field of special education for meeting the needs of students with disabilities. AT includes things like computers, tablets, and cell phones that disabled individuals use to help them carry out their daily activities (Cook & Hussey, 2002). The use of AT in special education is beneficial for students with a wide range of disabilities, including those related to mobility, cognition, sensory processing, and language (Bryant & Bryant, 2003). The purpose of this study is to take a comprehensive look

Corresponding author: Mona Saleh Alanazi
E-mail address: mona70546@gmail.com

at the present state of research on AT in special education, covering its benefits, drawbacks, and applications.

The introduction of AT into special education has been shown to be beneficial for students with disabilities in a variety of ways. A significant benefit of AT is its ability to encourage the development of cognitive and motor skills (Beukelman, 2008). Students with disabilities who use AT show gains in reading, writing, and communication (Cress & Chen, 2015). For students with disabilities to succeed in the long run, they must learn to work with others, advocate for themselves, and be self-sufficient, all of which can be facilitated by the use of AT (Furniss & Biswas, 2012). Students with impairments have the extra benefit of being able to fully engage in general education courses because of the use of AT in special education (McCarthy, 2013). By providing students with disabilities access to the same educational opportunities as their typically developing peers, AT can aid in reducing the achievement gap between students with and without disabilities.

While the use of AT in special education has the potential to yield many benefits, there are also many challenges that must be surmounted. Because of the need for tailored and student-centered approaches, AT implementation can be challenging (Bryant & Bryant, 2003). To ensure that each student receives the most beneficial AT solutions, educators must work closely with students and their families. One barrier to AT's widespread adoption in special education is the lack of consistent funding for it (Cook & Hussey, 2002). Teachers need training on how to integrate AT into their curriculum effectively. Students also need guidance on how to effectively advocate for themselves and use AT on their own.

2. REVIEW OF LIETERATURE

The research literature documents both the benefits of AT for students with disabilities and its drawbacks in the classroom. Customized technologies have been shown to aid this student demographic by Angelo (2000) and others by piquing their interest in learning and providing them with additional support. In their research, Murray and Rabiner (2014) found that students who used AT reported greater gains in knowledge and skills. Additionally, they aid students with disabilities in performing tasks that would otherwise be difficult (Sullivan & Lewis, 2000). Nelson et al. (2013), on the other hand, investigated ways to improve students' intellectual and language development. Multimedia AT (MAT) was found to improve academic achievement in a study conducted by Howard-Bostic et al. (2015). NcNicholl et al. (2019) conducted a systematic review of the use of AT by college students with disabilities and found four main themes: AT as a facilitator of academic engagement; barriers to effective AT use can hinder academic participation; the transformative possibilities of AT from a psychological perspective; and AT as a facilitator of participation. The potential benefits of AT for students with disabilities in terms of enhanced social acceptance and less stigma are similarly concluded by De Witte et al. (2018) and Asongu et al. (2019).

Byrd and Leon (2017) identified three main barriers that prevent students with disabilities from being approached and involved in the use of so-called tailored ATs: First, there is a lack of accessible technology for students with disabilities. The high cost of AT and the unpredictability of its funding both function as barriers to the

provision of AT to students with disabilities. Third, not enough teaching is given on how to use digital tools and resources, which is a major barrier for students with impairments. Some limitations on their application in special education were noted by Copley and Ziviani (2004). Among these are insufficient funds, problems with equipment management, a lack of time, teachers' bad attitudes, and inadequate assessment and planning procedures. Murray and Rabiner (2014) and Howard-Bostic et al. (2015), among others, highlight the problem of inadequate training for educators on the use of AT.

2.1 Potential Applications of AT in Special Education

When discussing the educational needs of pupils who have some kind of impairment, the term "special education" is typically used. The program's overarching goal is to help these students grow intellectually, socially, and emotionally by giving them a tailor-made education. The field of special education research is expanding, with recent studies looking at topics including the function of evaluation in shaping lessons and the effects of technology in the classroom. The application of Universal Design for Learning (UDL) principles, as demonstrated by the research of Rose and Meyer (2002), can increase the accessibility of educational materials for students with disabilities, hence improving their academic performance. Wiener and Dobler (2007) conducted research on the role of technology in special education and found that assistive technologies like text-to-speech software and voice recognition technology are helpful for students with impairments. Studies on the application of individualized teaching in special education have yielded positive results, showing that it can be an effective method for catering to the wide range of demands that students with disabilities have (Tomlinson, 1999). When it comes to assessment, Thurlow, Ysseldyke, and Moch (2002) discovered that using assessment data to influence instructional decision-making and boost students with disabilities' academic outcomes.

There is great promise for AT to promote the learning and development of students with disabilities across a wide range of academic and functional domains, despite the limitations connected with its implementation. Literacy, numeracy, and even executive function can all benefit from the use of AT (Cress & Chen, 2015). Self-advocacy, social skills, and independent living can all benefit from the use of AT. The use of AT in special education programs with the goal of enhancing children' academic performance has gained popularity in recent years. Different types of AT have been studied for their efficacy, along with the factors that help and hinder their use in educational settings. The study of how students with disabilities might benefit from mobile technology and apps is an exciting new topic. Johnston and coworkers (2012), for instance, discovered that iPads helped autistic youngsters with speech and attention. Another study that demonstrated iPad software to be helpful in enhancing social communication skills in autistic children was conducted by Hume and colleagues in 2013.

The study of how AT can improve literacy is another active area of inquiry. Reading comprehension and fluency were found to be enhanced when students with reading challenges used text-to-speech software, according to research by Arndt and colleagues (2015). Students with dyslexia who used dictation software had greater gains in writing ability, according to research by Fidalgo and colleagues (2019). The

benefits and drawbacks of implementing AT in classrooms have also been studied. According to research by Okolo and colleagues (2012), a lack of knowledge and training among educators is a significant barrier to the widespread use of AT. Choi et al. (2018), on the other hand, discovered that teacher training and support aided in the adoption of AT in schools. Recent studies have shown that AT can be a useful tool for helping students with disabilities succeed in school. To guarantee successful implementation, however, AT in schools may require supplementary teacher assistance and training.

The use of virtual and augmented reality as AT in special education is another field of study. Students with special needs may benefit from a more interactive and immersive educational experience with the help of virtual and augmented reality technologies. Researchers Anderson and colleagues (2018) showed that autistic pupils' spatial skills and problem-solving abilities improved with VR training. It has been shown that students with disabilities who use AT see positive changes in their social and emotional well-being as well as their academic performance. Zhang (2017) reported that social robots helped autistic youngsters with their communication and emotional development. Ramdoss et al. (2011) discovered that video self-modeling interventions helped students with disabilities become more socially and communicatively adept. Nonetheless, despite AT's promise, there remain obstacles to its widespread implementation in classrooms. According to research by Zainuddin and Perera (2018), a lack of money is a significant impediment to the widespread implementation of AT in educational settings. Vasa et al. (2018) also discovered that further research is needed to determine which AT solutions are most helpful for people with different types of disabilities.

Involving students with disabilities in the process of choosing and implementing AT has also been highlighted by recent studies. Students' happiness and use of AT improved when they were included in the decision-making process, according to research by Wu et al. (2019). In conclusion, current studies on AT in special education have shown its promise to enhance kids' academic performance, social and emotional well-being, and quality of life. However, more study is required to determine the most efficient AT interventions and remove obstacles to adoption in educational settings. Students with disabilities can benefit the most from AT if they are actively involved in the process of choosing and implementing this tool.

3. AT IN MIDDLE EASTERN COUNTRIES

Few studies have been conducted on the topic of AT in special education in the Arab world, but this is beginning to change. Alshehri and Alzahrani (2019) conducted research to better understand how educators in Saudi Arabia feel about using AT. The study indicated that while educators generally viewed AT favorably, barriers to its widespread implementation existed, notably a dearth of appropriate training and funding. Al-Saggaf et al. (2016) conducted research into how students in Saudi Arabia with visual impairments make use of assistive technologies. Students with visual impairments who used assistive technologies like screen reading software showed significant gains in reading and writing ability, according to the study.

Alghamdi et al. (2018) looked at how students with learning difficulties in the United Arab Emirates make use of assistive technologies. The study concluded that students with learning difficulties who used AT, such as text-to-speech software, saw significant gains in reading comprehension and academic accomplishment. Despite the obvious advantages, the Arab world faces challenges when it comes to embracing AT. Some of these are things like not having enough money or knowledge about AT. Evidence suggests that the use of AT in special education can be successful in enhancing learning outcomes for children with disabilities, although research on its usage in the Arab world is currently scarce. However, more study is required to discover efficient interventions and conquer obstacles to adoption in the area.

There have been a number of reports on the effectiveness of incorporating AAC into special education in Saudi Arabia in recent years. Students in Saudi Arabia who have learning problems are the focus of a study by Al-Azawi et al. (2018). Reading comprehension and academic performance were found to improve significantly for children with learning difficulties who used assistive technologies such as electronic dictionaries and text-to-speech software. Al-Gahtani, et al. (2016) conducted research on the use of mobile apps for students with autism in Saudi Arabia. Researchers found that teaching autistic pupils to use mobile apps like "social stories" and "communication apps" improved their ability to interact with others.

Despite the obvious advantages, there are still barriers to the widespread use of AT in Saudi Arabia. According to research conducted by Alshehri and Alzahrani (2019), educators in Saudi Arabia confront numerous challenges when it comes to implementing AT. In response to these difficulties, projects have been launched to expand the use of AT in Saudi Arabia's special education system. The Saudi Ministry of Education, for instance, has initiated a number of programs to equip educators with knowledge and tools to implement AT in the classroom. A lot more work needs to be done to remove obstacles to the use of AT, but there is evidence that it can help students with disabilities in Saudi Arabia learn more effectively. The success of students with disabilities in school depends on efforts to raise understanding, supply instruction, and distribute adequate resources.

Alkharusi and Al-Tobi (2019) conducted research into the same topic but in the neighbouring country of Oman, where many pupils with visual impairments attend school. Students with visual impairments were found to benefit from the use of AT like screen readers and magnifiers, according to the study. The use of AT in Omani special education for students with intellectual disabilities was also studied by Al-Said and Al-Abri (2018). Students with intellectual disabilities were found to benefit from the usage of AT, such as augmentative and alternative communication devices, in terms of their ability to communicate and interact with others. Efforts have been made to increase the availability of AT for students with special needs in the classrooms of the United Arab Emirates (UAE). The relevance of AT in facilitating the integration of students with disabilities into regular classrooms is highlighted, for instance, in the Dubai Inclusive Education Policy Framework, which was introduced in 2017. Alghazo et al. (2018) conducted research into the integration of AT into UAE special education for kids with impairments. Researchers found that students with impairments who used assistive technologies like screen readers and voice recognition software had significant gains in both academic performance and

autonomy. In the United Arab Emirates (UAE), Saudi Arabia, and Oman, there is a growing body of literature on the application of AT in the field of special education. Although there are barriers to the widespread use of AT in education, it is crucial that students with disabilities have access to the devices they need to be successful.

3.1 AT in Egypt

Several recent Egyptian studies have examined the utility and efficacy of AT tools and services in inclusive and specialized classrooms. One major takeaway from these research is that the implementation of AT in Egypt's special education sector is still in its infancy and faces numerous obstacles. Educators' and parents' lack of familiarity with the benefits of AT, the scarcity of appropriate devices and services, and the inability to secure adequate money all work against its widespread implementation in Egypt's special education system (Abd El-Ghaffar et al. 2019). Elgendy (2018) came to a similar conclusion: inadequate teacher preparation is a major barrier to the successful integration of AT into Egypt's special education system.

Despite these obstacles, some work has been done to increase the incorporation of AT into Egypt's special education curriculum. Special education students in Egypt, for instance, can now access AT equipment and services thanks to a new initiative by the country's Ministry of Education and Technical Education (Ministry of Education and Technical Education, 2021). Educators and officials in Egypt are also becoming increasingly interested in AT's potential to expand opportunities for students with impairments (Elgendy, 2018). There have been multiple investigations into how well AT works in special education settings in Egypt. Research by Elhussein et al. (2019), for instance, demonstrated that AT interventions can improve the academic performance and engagement of students with visual impairments in Egypt's mathematics classrooms. Students with autism spectrum disorder (ASD) in Egypt's special education settings can benefit from the usage of AT devices and services, according to research by Elwahsh et al. (2018).

Despite the studies' encouraging results, more investigation into AT's utility and efficacy in Egypt's special education context is clearly warranted. It is challenging to evaluate the effect of AT on students with disabilities due to the paucity of empirical data on the use and effectiveness of AT in the country. More research on the efficacy of AT and the identification of best practices for using AT in different settings was called for by Elgendy (2018). Egypt's special education system has struggled to incorporate AT due to a lack of funding and knowledge about the benefits of AT for students with disabilities. While there have been negative findings on the efficacy of AT interventions for students with disabilities, there have also been efforts to promote the use of AT. More study is required to assess the effectiveness of AT on students with disabilities and to determine the most effective ways to implement AT in a variety of Egyptian educational contexts. To improve the usage and efficacy of AT in special education in Egypt, it is crucial that instructors obtain training and support in how to use the technology effectively.

3.2 AT in Jordan

Over the past decade, there has been a growing demand for AT in Jordan, prompting researchers to examine the effectiveness of AT interventions in the country's special education institutions. These studies have found, among other

things, that the implementation of AT in special education in Jordan is still in its early stages and confronts a number of obstacles. The lack of money for AT programs, the restricted availability of AT devices and services, and the lack of awareness and knowledge among educators and parents are just some of the obstacles to the use of AT in special education in Jordan (Abu-Hamour & Abu-Saad, 2016). Al-Sa'di (2018) came to a similar conclusion, stating that inadequate training and support for teachers using AT is a major barrier to the successful implementation of AT treatments in special education in Jordan. Despite these obstacles, some work has been done to expand the use of AT in Jordan's special education system. For instance, in Jordan, the Ministry of Education has initiated a program to supply special education students with AT devices and services (Ministry of Education, 2021). Educators and politicians in Jordan have also shown a growing interest in AT as a means of expanding opportunities for children with impairments to participate fully in the classroom setting (Al-Sa'di, 2018).

Research into the usefulness of AT in Jordanian special education settings has also been conducted. Studying the role of AT in the literacy development of students with dyslexia in Jordan, Al-Taani (2018) discovered that AT interventions can improve students' reading and writing skills. Similarly, Abu-Rmaileh and Abu-Zhaya (2019) discovered that students with autism spectrum disorder (ASD) in special education settings in Jordan benefited from the incorporation of AT devices and services into their daily routines. Despite these encouraging results, the studies also show that more investigation into AT and its effectiveness in Jordanian special education settings is needed. It is challenging to evaluate the effect of AT on students with disabilities due to the paucity of empirical data on the use and effectiveness of AT in the country. More studies on the efficacy of AT and the identification of best practices for using AT in different settings were called for by Al-Sa'di (2018). Several obstacles have impeded the implementation of AT in special education in Jordan, including a dearth of funding and a general lack of understanding on the part of teachers and parents. While there have been negative findings on the efficacy of AT interventions for students with disabilities, there have also been efforts to promote the use of AT. The effectiveness of AT for disabled students and the identification of best practices for its use in various settings in Jordan need more study. To improve the usage and efficacy of AT in special education in Jordan, it is crucial that instructors receive training and support on how to use the technology effectively.

3.3. AT in Yemen

As a result of being one of the region's poorest countries, special education in Yemen has had limited access to AT. In Yemen, special education settings have struggled to effectively implement AT treatments due to a lack of resources, infrastructure, and experience, despite rising acknowledgment of the relevance of AT in boosting the learning and development of students with disabilities. Only a small number of studies have looked at where AT stands in special education in Yemen right now. In Yemen, Al-Sakkaf (2017) surveyed special education teachers to gauge their level of familiarity with and understanding of AT. The survey indicated that while most educators were familiar with the concept of AT, their understanding of its many forms and uses was limited. The study also emphasized

the difficulties special education instructors in Yemen face in implementing AT interventions due to a lack of resources and training opportunities. The views and opinions of Yemeni parents of disabled children about AT were also investigated in a study by Al-Worafi et al. (2019). The study revealed that parents in Yemen knew very little about AT and its benefits and that there were substantial financial hurdles to gaining access to AT devices and services. The research also showed that more education and training programs for parents and caregivers are needed to help them make the best use of AT.

There have been various initiatives to increase the availability of AT for students with special needs in Yemen's public schools. One such partnership is between the World Health Organization (WHO) and the Ministry of Education in Yemen to promote the use of AT in special education and to offer related training and resources (WHO, 2021). While the ongoing conflict in Yemen has limited the reach of these programs, some non-governmental organizations (NGOs) have provided AT devices and services to children with disabilities. A lack of funding, facilities, and trained professionals hinders the implementation of AT in special education in Yemen. The continuous violence in the country has also made it more challenging to provide the required assistance and services to children with disabilities. Some efforts, however, are being made to spread the word about AT and raise awareness among teachers, parents, and other caretakers. There needs to be more investigation into the efficacy of these interventions and the best ways to implement AT in the specific setting of Yemen.

3.4 AT in Qatar, Kuwait and Iraq

In Qatar, Kuwait, and Iraq, there is a dearth of studies examining the role of AT in special education. However, a number of studies have highlighted both the obstacles and possibilities associated with AT's widespread adoption in these nations. The attitudes of Qatari educators and parents on the implementation of AT in special education were investigated in a study by Al-Hamed and Al-Jaber (2019). The research showed that both educators and parents understood the value of AT in helping students with disabilities learn. However, they also noted several obstacles to the efficient application of AT, such as a dearth of resources and technical support, inadequate teacher training and awareness, and pervasive cultural attitudes and beliefs about disability.

Aljassar et al. (2021) conducted research in Kuwait to find out how students with visual impairments use AT to help them succeed in school. Researchers showed that students who used AT like screen readers and braille displays had dramatic gains in their academic performance. However, the study also highlighted the difficulties students and teachers face in gaining access to and using AT devices, such as the high cost of devices and the lack of readily available technical support. Al-Bayati et al. (2019) conducted research in Iraq to explore the barriers and benefits of incorporating AT into special education. The research uncovered a number of barriers, such as inadequate money and resources, a lack of proper regulations and guidelines for the use of AT in special education, and a lack of awareness and expertise about AT among teachers and parents. The survey did find some bright spots, though, including rising policymaker interest and support as well as access to foreign resources and experience. Overall, the scant study into AT's usage in special

education in Qatar, Kuwait, and Iraq reveals that, while there are chances for the effective implementation of AT, there are also substantial problems that must be addressed. The efficient use of AT in special education settings is hindered by a lack of resources, including money, technical assistance, and training for educators and parents.

3.5 AT in Saudi Arabia

A brief summary of AT's application in Saudi Arabia is provided by Al-Ateeq and Al-Beeshi (2019). More research and resources are needed to support the use of AT in the country, which is something the authors emphasize. Although it's informative, the article doesn't delve deeply into the benefits and drawbacks of implementing AT in Saudi Arabia. Children in Saudi Arabia who have autism spectrum disorder (ASD) were the focus of a scoping review by Alahmadi et al. (2021). Based on their findings, the authors argue that more research and resources are needed to effectively employ AT with children who have ASD. The essay sheds light on the difficulties children with ASD have in gaining access to AT in Saudi Arabia, but it solely addresses this particular impairment.

Students with impairments in Saudi Arabia have access to a comprehensive overview from Al Sobhi and Ahmad (2020). The authors emphasize the positive effects of AT on students' academic performance and social integration. However, more resources and training for teachers to effectively use AT in the classroom are also highlighted in the article. Insights into the current level of AT use in special education in Saudi Arabia are provided in this article; however, the article does not include an analysis of the obstacles and potential benefits of adopting AT in the country. Al-Zahrani and Al-Mansour (2018) examine the barriers to and potential benefits of AT for students with special needs in Saudi Arabian classrooms. While there is a growing recognition of the importance of AT in the United States, the authors argue that there are still significant challenges that must be addressed. These include a lack of resources, a lack of awareness among educators and families, and a lack of training and support for using AT. In this essay, we take a close look at the current condition of AT in Saudi Arabia's special education system and highlight crucial areas for development. You can learn more about the government's initiatives to promote the use of AT in special education on the website of the Ministry of Education in Saudi Arabia (2021). The website emphasizes the government's dedication to supplying kids with disabilities with AT devices and services, as well as providing teachers and families with training and assistance. The webpage is helpful, but it doesn't go into detail on the benefits and drawbacks of adopting AT in Saudi Arabia's special education system. The results of this research shed new light on the accessibility technology landscape in Saudi Arabia. Access to appropriate technologies and the requisite support for those with disabilities to utilize them effectively is an issue that has to be addressed despite the growing use of AT in the country. Improving access to AT devices and services, boosting knowledge of the benefits of AT, and increasing resources and training for educators and families are all crucial areas for development.

Over the past two decades, AT has gained widespread acceptance in Saudi Arabia as a vital resource for facilitating students with disabilities access to and participation in general education classrooms. Researchers have looked into the

usefulness of AT tools and services in a variety of special education settings around the country. These studies have found, among other things, that the availability and implementation of AT in special education settings in Saudi Arabia remain problematic areas for improvement. A lack of awareness and expertise among educators and parents, limited availability of AT devices and services, and a lack of money for AT programs were all cited as obstacles to the use of AT in special education by Al-Zahrani and Al-Mansour (2018). These findings were repeated by Al-Ateeq and Al-Beeshi (2019), who pointed out that a lack of skilled personnel and scarce resources pose serious obstacles to the efficient implementation of AT in special education in the country. Despite these obstacles, there have been some initiatives to increase the incorporation of AT into special education in Saudi Arabia. A program to provide AT equipment and services to students with impairments in special education has been launched by the Saudi Arabian Ministry of Education (Ministry of Education Saudi Arabia, 2021). According to AlSobhi and Ahmad (2020), educators and policymakers in Saudi Arabia have shown a growing interest in AT, which may indicate a growing acknowledgment of the potential benefits of AT for children with disabilities.

There have been multiple investigations into AT's usefulness in Saudi Arabia's special education programs. A scoping review of the literature on AT for children with autism spectrum disorder (ASD) in Saudi Arabia by Alahmadi et al. (2021) indicated that AT therapies can improve children with ASD's communication and social abilities. Based on their comprehensive assessment of research on AT for students with disabilities in Saudi Arabia, AlSobhi and Ahmad (2020) concluded that AT has the potential to boost students' academic and social performance. Despite the studies' encouraging results, more investigation into AT's usefulness in Saudi Arabia's special education context is warranted. It is challenging to evaluate the effect of AT on students with disabilities due to the paucity of empirical data on the use and effectiveness of AT in the country. More studies, according to Al-Ateeq and Al-Beeshi (2019), are needed to determine the efficacy of various forms of AT and to determine best practices for their application in various contexts.

In addition, the studies analyzed indicate that teachers and other special education professionals could benefit from additional training and professional development in order to make the best possible use of AT in the classroom. According to Al-Zahrani and Al-Mansour (2018), many Saudi Arabian teachers aren't properly trained on how to use AT devices and services, which hinders their capacity to effectively integrate AT into their classrooms. AlSobhi and Ahmad (2020) came to a similar conclusion, observing that many Saudi Arabian educators struggle with AT owing to a deficiency of training and assistance. Therefore, it is crucial that special education teachers be given the resources they need to learn how to incorporate AT into their lessons. This includes instruction in the use of AT devices and services, as well as guidance on how to most effectively incorporate AT into classroom instruction. Teachers' familiarity and comfort with using AT for students with special needs can be improved by participation in workshops and other professional development opportunities.

Educators, policymakers, and researchers are all key players in the field of special education, and the evaluated papers highlight the importance of working

together. When discussing the barriers to AT use in special education in Saudi Arabia, Al-Ateeq and Al-Beeshi (2019) stressed the importance of collaboration between various stakeholders. Al-Zahrani and Al-Mansour (2018) echoed this sentiment, noting that successful AT intervention requires collaboration between teachers and other specialists including speech and occupational therapists. To sum up, insufficient resources and a lack of understanding among educators and parents have been two of the biggest obstacles to implementing AT in special education in Saudi Arabia over the past two decades. While there have been negative findings on the efficacy of AT interventions for students with disabilities, there have also been efforts to promote the use of AT. More research, training, and collaboration among different stakeholders in the field are needed to increase the use and effectiveness of AT in special education in Saudi Arabia. These initiatives have the potential to boost the educational and social outcomes for students with disabilities by increasing their access to and participation in mainstream classrooms.

3.6 AT in Oman

The role of AT in facilitating the education of students with disabilities in Oman has grown significantly in recent years. The government of Oman has taken action to increase both access to and understanding of AT. However, more study and funding are required to fully implement AT in Oman's special education system. The dearth of study and awareness on the problem was observed in a review of the literature on AT use in special education in Oman by Al-Mahrooqi et al. (2022). To better understand the current state of AT use and to identify the gaps and difficulties that need to be addressed, they suggested conducting additional research.

Despite the obstacles, Oman has seen some positive results with the use of AT in special education. For instance, Al-Mahrooqi et al. (2021) discovered that students with learning difficulties in Oman benefited greatly from the implementation of AT. They advocated for training and assistance for both instructors and students, as well as the use of assistive software and hardware to facilitate education. However, special education teachers still face obstacles when trying to incorporate AT into their lessons. According to Al-Harthy (2019), a scarcity of AT devices and inadequate training and support for educators were two of the biggest obstacles to adoption. They advocated for the necessity of further training and assistance, as well as the creation of policies and guidelines to facilitate the use of AT in special education. More study, publicity, and funding for AT in special education are all needed in Oman. Access to and use of AT in special education in Oman could benefit from the establishment of laws and guidelines, as well as from increased training and support for teachers and students.

3.6 AT in the UAE

Students with disabilities can greatly benefit from AT in the classroom since it allows them to overcome obstacles and reach their full potential. The United Arab Emirates (UAE) has been pushing hard to get more schools to adopt AT for students with disabilities. The current landscape of AT in special education in the United Arab Emirates will be critically analyzed, along with the potential and obstacles that exist in this subject. The government of the United Arab Emirates (UAE) has taken many measures to promote the use of AT in the classroom. For instance, the 2017 Dubai

Inclusive Education Policy Framework aspires to create a fully accessible and inclusive educational environment for all students, including those with special needs. The policy framework emphasizes AT and suggests ways to implement it in the classroom.

Several groups in the UAE advocate for the inclusion of AT in special education, complementing the efforts of the government. For instance, the Abu Dhabi Rehabilitation Centre (ADRC) offers evaluations of AT and training for parents and educators of disabled children (Abu Dhabi Rehabilitation Centre, n.d.). Support for students with ASD can also be found through the Dubai Autism Centre (DAC) in the form of services and resources (Dubai Autism Centre, n.d.). Despite these gains, several obstacles remain in the way of AT's usefulness in UAE special education. The widespread lack of knowledge and understanding among teachers and parents is a significant barrier. Sulaiman, et al. (2020) found that many teachers lacked knowledge about accessible technology and its successful use in the classroom. When students with disabilities could benefit from using AT, they may be reluctant to do so because of this.

The restricted supply of AT in the UAE is another difficulty. Some groups and service providers do offer AT evaluations and instruction, but the selection may be limited or the costs too high for some people (Alqahtani et al. 2021). Because of this, schools and families may be hampered in their efforts to gain access to and benefit from AT. In addition, there is a dearth of studies examining the efficacy of AT in special education in the United Arab Emirates. While there are studies of AT's application elsewhere, more studies tailored to the UAE are needed (Sulaiman et al. 2020). This would aid in determining how best to employ AT tools and practices for students with disabilities in the UAE classroom. Despite these obstacles, however, the UAE presents an opportunity to successfully implement AT in special education. The widespread adoption of technological solutions presents one such chance. Increased access to online education and digital resources in the UAE as a result of the COVID-19 epidemic may open up fresh avenues for the implementation of AT (Alqahtani et al., 2021).

The United Arab Emirates' (UAE) increasing interest in inclusive education is another possibility. For instance, the Dubai Inclusive Education Policy Framework (2017) argues that all students, regardless of their background or physical capabilities, deserve access to the same high-quality educational opportunities. Students with disabilities can greatly benefit from using AT in general education settings, and this emphasis on inclusion makes a compelling argument for its usage in special education. Another study that looked into how educators and parents in the UAE felt about AT was undertaken by Al-Shamma'a and Al-Qaroot (2019). Researchers found that educators generally viewed AT favorably and believed it had the potential to improve student learning and classroom inclusiveness. Parents, on the other hand, were more wary and worried about AT's price and availability. Although progress has been made in implementing AT in special education in the UAE, there are still some obstacles that must be removed. Lack of teacher training in the usage of AT is one such issue. Studies have shown that many educators lack the expertise to successfully incorporate AT into their classrooms. Because of this, kids with disabilities may not reap the full benefits of using AT. The price and

accessibility of AT also pose challenges. Many educational facilities may lack the financial means to purchase AT, despite its obvious benefits. This can lead to disparities in the availability of AT for children with impairments, which in turn can worsen existing educational disparities. To rephrase, AT may prove useful in facilitating the education and growth of students with special needs in the United Arab Emirates. There are prospects for its expansion and integration in the school system, despite various hurdles to its effective usage, such as limited awareness and availability of AT and a lack of research on its usefulness in the UAE environment.

3.7 AT in Sudan

Despite some recent progress, AT is still in its infancy in Sudan. In spite of this, there has been some development in recent years regarding the accessibility of AT tools and programs. The government of Sudan has taken measures to increase accessibility to AT for individuals with disabilities as a result of this recognition. The government of Sudan formed the National Council for Disabilities in 2010 to coordinate the country's efforts to improve the lives of individuals with disabilities. In addition to the government, a few NGOs and private businesses in Sudan offer AT equipment and services. For those who are blind or visually impaired, resources, including Braille printers, screen readers, and other AT equipment, are available at the Khartoum Centre for the Rehabilitation of the Blind (KCRB) (El-Bashir et al. 2019).

However, substantial obstacles remain to the creation and use of AT in Sudan. According to research by El-Tahir and Hassan (2019), the adoption of AT in Sudan is hindered by a number of factors, including a lack of AT competence among professionals, a scarcity of appropriate devices, and prohibitive costs. Another study by Hamza and Alashry (2017) found that there should be more public education and training about AT for individuals with disabilities, and that there should be policies and guidelines to back up the creation and use of AT in Sudan. Overall, more education, training, and funding are required to advance the use of AT in Sudan. People with disabilities in Sudan need the government, non-governmental organizations (NGOs), and private sector to work together to overcome these obstacles and expand the availability of AT and related services.

Countries in Arabic-speaking Africa, such as Tunisia, Palestine, Algeria, and Morocco, are seeing a growth in interest in and development of AT. Some literature from the past decade is listed below for your perusal: Mobility aids, hearing aids, and communication aids were reported to be the most commonly requested pieces of AT by the respondents of a survey conducted by Ben Slama et al. (2018) in Tunisia. Khemakhem and Karray (2019) dug into the topic of incorporating AT into regular classrooms for intellectually disabled pupils. AT, such as multimedia materials and interactive whiteboards, was found to increase students' participation and engagement in classroom activities for those with intellectual disabilities. Masmoudi et al. (2019) created a mobile app with visual aids, communication boards, and social stories for children with ASD in Tunisia who speak Arabic. According to research by Alareeni et al. (2020), there is a need for education and advocacy, as well as a shortage of resources, which prevents Palestinians with disabilities from making use of AT. In Palestine, web-based software developed by Khader et al. (2016) was used to successfully treat Arabic-speaking infants with speech sound problems.

Ammor et al. (2017) developed a smartphone app to assist the visually handicapped in Morocco with cash recognition. According to studies conducted by Ennaji et al. (2020), people with hearing loss in Morocco are primarily using hearing aids and cochlear implants as their primary types of AT. Students on the autistic spectrum (ASD) have been the focus of Bouabid et al.'s (2020) investigation of the efficacy of AT. Students with ASD were found to greatly benefit from AT, such as communication aids and visual timetables, in terms of both increased communication and decreased challenging behaviors.

According to Elzbieta and Abou-Zahra's (2020) survey of web accessibility in Arabic-speaking African countries, few sites make use of the guidelines available to them. Mahamane et al. (2015) developed a speech recognition system for the Hausa language in Niger, which may pave the way for AT in other Arabic-speaking African countries. Benaouicha and Benachour (2016) looked into the difficulties of providing supplementary aids and services to high school pupils in Algeria who are blind or visually impaired. They concluded that the primary obstacles to efficient AT implementation were a lack of funding and insufficient teacher preparation. Despite the growing interest and advancement of AT in Arabic-speaking African countries, significant barriers remain in terms of resources, device availability, expert and public knowledge, and training. More research and teamwork are needed to remove these roadblocks to accessing AT for people with disabilities in these countries.

4. CONCLUSION

In conclusion, in Arabic-speaking countries, AT has become an essential component in fostering inclusive education for students with disabilities. Accessible technology has the ability to aid students with disabilities in their academic and social pursuits, despite some obstacles such as limited resources, a lack of awareness and training, and problems identifying acceptable solutions. According to the research that was analyzed, numerous Arab-speaking countries have made efforts to incorporate AT into special education. The United Arab Emirates (UAE), Tunisia, and Morocco are just a few examples of countries that have set up centers and programs to offer AT services to students with impairments. Sudan, Palestine, and Egypt are just a few of the countries that have begun including AT in their special education curriculums.

To advance AT in Arab-speaking countries, however, further work is required. More money and resources need to be allocated by governments and institutions to help with the creation and distribution of AT services. Teachers, parents, and students would all benefit from increased familiarity with AT devices and software if awareness campaigns and training programs were put into place. Furthermore, more study is required to examine the efficacy of AT interventions and determine the best solutions for various disabilities and settings. Finally, it must be stressed that AT is not a replacement for good pedagogical methods or for addressing the underlying causes of disability. Therefore, AT should be incorporated into special education as part of a holistic strategy that also includes early detection and intervention, individualized lesson plans, and fully inclusive classrooms. By taking this stance, Arab-speaking nations may guarantee that their disabled citizens have full participation in and benefit from the educational system. When partners in Arab-

speaking nations work together, the future of AT is bright, and the lives of students with disabilities can be greatly improved.

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ARTIFICIAL INTELLIGENCE'S IMPACT ON CHILDREN EDUCATION AND HEALTH AND CHILDREN'S RIGHTS

MUSTAFA, YILMAZ [a]
[a] Istanbul University-Cerrahpaşa, Institute of Forensic Sciences and Legal Medicine, Department of Social Sciences, Istanbul, Turkey

Abstract

Artificial intelligence is spreading rapidly in all areas of life theoretically and practically and is providing many different changes and developments in these areas. It is shown as one of the three biggest events in history. It has a permanent and completely consistent feature that can spread quickly to large masses. Artificial intelligence affects not only adults, but also all individuals, including children and adolescents. Children and adolescents are taking their place more and more in important life departments such as daily life, education, health. In this study, it is revealed how artificial intelligence affects the living spaces of children and adolescents. While affecting and changing the whole life, there are various opinions, concerns and solution proposals related to legal situations and loopholes in the field of ethics, regarding the protection of the privacy of the private life of individuals. With the benefits it provides, the concerns it brings and the groundbreaking expectations for the future, it is believed that artificial intelligence will inevitably continue to influence individuals and societies in the short and long term.

Keywords: *artificial intelligence, children, education, mental health.*

1. INTRODUCTION

Artificial intelligence (AI) refers to systems or robots that execute tasks by mimicking human intelligence and can gradually improve itself with the data it accumulates (Jarret & Choo,2021). A computer scientist coined the term "artificial intelligence." It has been described as "the science and engineering of producing intelligent machines" by John McCarthy. He defined artificial intelligence as a designed structure for logical, exploratory, pattern recognition, inference making, and experiential learning; he highlighted applications such as games, speech, natural language comprehension, and three-dimensional computer vision (McCarthy, 2004). According to legend, the defeat of Garry Gasparov by an artificial intelligence termed "Deep Blue" in 1997 was the first significant influence of artificial intelligence on the globe (Ardatürk, 2022).

Corresponding author: Mustafa YILMAZ, Istanbul University-Cerrahpaşa Institute of Forensic Sciences and Legal Medicine, Department of Social Sciences, Istanbul, Turkey
E-mail address: mustafayilmaz@myself.com

Artificial intelligence appears in a variety of forms. For example, our shopping habits can be tracked using smart devices, traffic lights can be changed, suspects can be identified using facial recognition (Martin, 2020), trainings can be personalized (Arslan, 2020), inferences about our mental health can be made (Uçar et al., 2018), and children can be cared for by robots (Sano, Horii, Abe, & Nagai, 2021). In these settings, where not only human activities but also machines are changing, Microsoft's artificial intelligence DeepCoder's goal is to produce code, while Google's AutoML artificial intelligence's task is to control other artificial intelligences (Ardatürk, 2022). We may notice the presence of artificial intelligence in all individual and social sectors, with beneficial and harmful consequences (Coşkun and Güllerolu, 2021).

In terms of how artificial intelligence works, there are two types: weak artificial intelligence, which is based on machine programming, and strong artificial intelligence, which can evolve autonomously and on its own after programming. The possibility of powerful artificial intelligence to take control and manage people and systems alone, which is feared and opposed by some organizations, is widely accepted (Pirim, 2006). Deep learning and machine learning are prominent concepts in the field of artificial intelligence. Machine learning refers to a structure that learns from data and improves its own performance. Machine learning is a subset of artificial intelligence. It cannot define everything of artificial intelligence (Gutierrez, 2017). Many subfields have been added and will continue to be added. These include artificial neural networks, fuzzy logic, expert systems, computer vision, genetic algorithms, chaotic modeling, and robotics (Işler and Klç, 2021).

Artificial intelligence is concerned with brain functions and decision-making processes. It is a thinking mechanism that can also express emotions. Individuals' emotions, thoughts, and behaviors all have an impact on one another. Individuals' emotions and the cognitive processes affected by them are not stable and can vary rapidly (Martinez-Miranda & Aldea, 2005). Childhood traumas and cyber traumas, on the other hand, may be included on the last plane. Cyber traumas and cyber victimizations, which occur in addition to persistent childhood traumas, cause the emergence of cyber dissociation and cyber alter personalities, particularly with the advent of digital technology. Traditional/offline victimization and cyber victimization occur as a result of traumas that occur both offline and online, and the individual attempts to regulate the distressing situation by interacting with his abuser in order to manage his trauma (Derin and ztürk, 2020).

The following are the primary aspects that make the usage and development of artificial intelligence appealing: low cost (Tahça, 2009), easy access to high-performance IT features; a vast amount of data is available for education; and applied artificial intelligence provides a competitive edge. Intelligent information is required for the operation and growth of artificial intelligence. Artificial intelligence possesses a permanent, perfectly consistent property that may be rapidly disseminated to a large audience (Bozüyük, Yac, Gökçe, & Akar, 2005). Artificial intelligence has been identified as one of the three most significant occurrences in history. These are as follows: the creation of the universe, the birth of life, and the discovery of artificial intelligence (nder and Saygul, 2018). The emergence of artificial intelligence has been the result of many years of accumulation. In historical

order, it can be assumed that Daedelus, who is supposed to be the deity of wind in Greek mythology, began with a "artificial-human" enterprise thousands of years ago. Between 1965 and 1970, practically little progress was made. Computer experts planned to create intelligent machines by merely downloading data and establishing a thinking process. As a result, there was a period of waiting. There was a time between 1970 and 1975 when the road was cleared for rapid expansion. Artificial intelligences have created methods for disease detection. The groundwork for today's expansions has been laid. Artificial intelligence researchers began to use other disciplines of study, such as language and psychology, between 1975 and 1980. From 1980 to the present, artificial intelligence has been brought out of laboratories and considered with far more complex applications based on real-world needs. Today, more innovations have been revealed in a shorter period of time than in any previous periods (Pirim, 2006). The following are the most notable research that reveal the consequences of artificial intelligence: A program that could play chess with artificial intelligence was built in 1952. General Motors produced the first commercial robot, Unimate, in 1961, and it was demonstrated in 1968 that computers could interpret English terms. Honda initiated a secret project in 1986 to construct a humanoid robot. Deep Blue, a chess computer, defeated Gasparov in 1997. Honda created ASIMO, an intelligent human robot, in 2000. In 2009, Google created a driverless car, and memory was added to artificial intelligence in 2017 (Işler and Kılıç, 2021).

The artificial intelligence data pool Big Data is information gathered and analyzed through the monitoring of internet network traffic and social media. Big data is viewed as a revolution in artificial intelligence (Lohr, 2012). As one of the applications of artificial intelligence, it is an important source of data in discovering the daily habits, needs, and orientations of individuals and societies that cannot be known using traditional methods, and data is increasing exponentially every day (Atalay and Celik, 2017). These data are utilized to study current social spaces, as well as persons and communities, in order to design smart cities with livable and sustainable progress (Allam & Dhunny, 2019). The importance of big data in the realm of health is growing by the day. It is utilized for diagnosis, improvement, speedy treatment, and prediction. Blockchain is employed for this purpose in electronic health records, remote patient monitoring with smart sensors, drug supply and management, billing, clinical trials, and experimental processes (Pablo et al., 2021). Some children and teenagers contribute to big data by sharing psychiatric condition diagnoses and symptoms on social media. As a result, it has been said that adolescents will be able to be watched through social media shares (Uçar et al., 2018).

Artificial intelligence has had an impact on every aspect of modern life. It is available in all machine-based industries that we can think of, including military technology, aircraft, games, telephone, television, and computers, insurance, and communication (Gür, Ayden, & Yücel, 2019). One of them is the medical field. Today, artificial intelligence provides early disease detection, a better knowledge of disease progression, the discovery of new medicines, and the accurate adjustment of drug and treatment dosages. The artificial intelligence platform that will increase cancer research productivity by tenfold, the creation of two potential drug targets for

Alzheimer's disease in about a month with an artificial intelligence system that shortens the duration of drug research that takes many years and costs a lot, the expensive test used to create a suitable treatment for breast cancer can be performed at a low cost, the risk of high-risk ones ovulation. Each of them exhibits significant disparities in terms of speed, cost, and utility. The fact that information is massive and continues to accumulate indefinitely boosts the development of artificial intelligence geometrically (Kent, 2020).

2. The Use of Artificial Intelligence in the Field of Health

Human-centered, multifaceted management mechanisms, as well as trust, empathy, and safety, have emerged as the main expectations in the use of artificial intelligence in the field of child and adolescent health; sensor technology, cleaning robots, virtual reality visits, and 3D organs have been the most preferred among the services offered, while artificial intelligence-assisted nurses have been the least accepted. Children's and young people's ideas will be vital in shaping their own futures in areas of artificial intelligence development (Visram et al., 2021). In another medical sector investigation, hypertrophic cardiomyopathy was accurately identified at a high rate using an artificial intelligence electrodiagram in children and adolescents (Siontis et al., 2021).

Artificial intelligence is a significant component of the multidisciplinary entity in mental health, another discipline where it exists. With the need to include emotion and cognition into the intelligence-based machines created, these two fields have begun to collaborate and influence one other more. In recent years, artificial intelligence has made significant contributions to psychology, assisting mental health specialists in active areas of psychology such as prediction, prognosis, treatment, and intervention, as well as developing coping strategies for individual individuals and creating products that will be used for the benefit of people (Yilmaz, 2021). How to ensure patient privacy, whether there will be transparency in artificial intelligence training, whether to work with a sample to represent the general population, whether the new order that replaces the traditional order will have a disruptive effect, as in some technological developments, the risks that the industry and its related functioning may bring are issues that cause concern (He & al., 2019).

According to Allen (2020), there are no studies on the use of artificial intelligence in mental health in general standards; however, there are more small local efforts; the content of these studies is formed by artificial intelligence models that can predict when someone may be safe to leave the hospital or when the suicide risk is lower, which medications someone may respond to, and the patient should receive inpatient treatment. It has been suggested that the use of artificial intelligence in mental health may be more challenging than in other professions, and that it is less possible to identify a diagnosis in psychiatry based on the model that exists in other branches (including radiological and pathological results). The research to be undertaken, it has been indicated, will not directly diagnose and treat, but will provide help to professionals and will be aimed at preventing diseases and providing personal development (Doraiswamy, Blease, & Bodner, 2020). It has been argued that the usage of artificial intelligence in mental health will evolve in a two-way fashion. The first is the natural language processing process, which enables artificial

intelligence to understand and interpret human language; the second is the incorporation of various biomarkers with artificial intelligence during the early detection and diagnosis of certain disorders (Brunn, Diefenbacher, Courtet, & Genieys, 2020).

It has been suggested that the usage of artificial intelligence in this field may expand due to a shortage of doctors to treat the 792 million individuals worldwide who suffer from mental health problems (Allen, 2020). 791 psychiatrists from 22 countries were polled about the impact of artificial intelligence in the field of mental health during the next 25 years. When asked if artificial intelligence could replace a psychiatrist, half of the participants said it would affect the nature of the work, and 4% might lose their jobs. While 75% of participants believe that artificial intelligence tools can replace updating medical records, 33% believe that AI will one day be able to conduct mental health examinations, and only 17% believe that AI will be able to provide empathetic care to patients (Doraiswamy, Blease, & Bodner, 2020).

The initiative, which was created as a smartphone app for use in the field of mental health, employs a technology known as phenotyping to offer professionals and patients with information that is always up to date regarding their mental state. MindLAMP (learn, assess, manage, prevent) collects multiple data streams from patients such as questionnaires, cognitive exams, GPS locations, and exercise information. It has been said that the psychiatrist and the patient can determine jointly which data to gather, which can help the patient and the psychiatrist monitor potential side effects and mood for a person starting a new drug (Tourus et al., 2019; Vaidyam, Halamka, & Tourus, 2019). They employ machine learning in another application called BiAffect to anticipate individuals' manic and depressive periods based on keyboard input. A link between emotional states and keyboard information was discovered in a study of persons with bipolar disease (Zulueta et al. Dec., 2018).

Machine learning technologies in artificial intelligence can be used to predict, detect, and treat mental health. Deep learning from children's speech patterns can detect depression and anxiety and produce speedy answers in situations that could otherwise be neglected. Data analytics based on artificial intelligence correctly predicts symptoms from patient data. It can offer preventive services before mental health problems occur, as well as low-cost and easily accessible counseling to patients. A deep learning-supported integrated prediction model (DLIPM) and convolutional neural networks were designed for this goal. In comparison to other current approaches, the numerical findings reveal that the suggested method has a high sensitivity rate of 97.9%, specificity rate of 96.7%, recall rate of 95.6%, F-measurement rate with accuracy rate of 90.1%, and error rate of less than 9.2% (Zhang, Wang, Sharma, & Deverajan, 2021).

It has been stated that in ataxic dysarthria, which occurs as a neurological problem, the structured speech disorder test for children with ataxia using a hierarchical machine model is provided, the diagnosis of patients with ataxia can be made using machine learning in a study conducted with 10-second recordings of the PATA test, and the stratification of dysarthria severity will be provided using deep learning (Tartarisco et al., 2021). Woebot, an internet-based cognitive behavioral therapy application, has been used to provide self-help in those suffering from depression, anxiety, and substance abuse. It has been used in the treatment of

substance abuse on average twice a week for 8 weeks. Treatment is available without regard to geographic distance, access issues, or stigma. A 2-week trial indicated a significant reduction in anxiety and depression symptoms. It has been discovered that there is a large rise in resistance to drug use impulses. 76% of individuals who used the app said they would suggest it, 80% got the service they sought, and 43% said it addressed most or all of their needs (Fitzpatrick, Darcy, & Vierhile 2017; Prochaska et al., 2021).

3. The Use of Artificial Intelligence in the Field of Education

Artificial intelligence influences children on an individual, social, educational, and spiritual level, and it enters their lives earlier than adults. Adults are born into later developments, so their adaptations can be rapid, and their engagement and influence can be more intense. Many sectors are involved in the effects of artificial intelligence on children and child mental health, such as cyber activities, studies in children's mental health, educational programs and activities established (Benzim and Benzim, 2019; Morsünbül, 2018; Arslan, 2020). Education should serve as a springboard for intentional applications of artificial intelligence and AI-based technologies. While improving the quality of educational processes through digitalization, concepts such as electronic information and educational environment, digital didactics, and electronic pedagogy are introduced, learning processes should be personalized, improved, and managed through the analysis of educational data (Barakina, Popova, Gorokhova, & Voskovskaya, 2021). The application of artificial intelligence in education was also deemed important in order to harmonize the effects it has on all fields of science and society, and it was emphasized that artificial intelligence should be used when preparing education for artificial intelligence (Coşkun and Güllerolu, 2021). Children may fall behind their classmates in contexts where there is not enough time allocated to individual learning speeds and approaches in educational planning for children; they may face poor emotional conditions in addition to academic failure and may not fully reflect their potential (Sağdıç and Sani-Bozkurt, 2020). Artificial intelligence in education can create student-centered learning environments, personalize content, environment, and materials based on the student's unique characteristics, motivate students who are unable to attend school in October, and provide additional assistance to students with special educational needs. High-efficiency learning environments can be built in which students interact with their virtual teachers via designed teaching settings and for the needs of students from a variety of contexts and disciplines (Uçar, 2007; Arslan, 2020). For example, in China, speech recognition technology and artificial intelligence systems to assist in speech therapy utilizing Chinese syllable categorization methods have been created (Xu, Zou, & Lin, 2020).

Artificial intelligence is used in education as expert systems, intelligent instructional systems, and dialogue-based systems. Expert systems are computers that do tasks that would normally be undertaken by individuals with expertise in a certain topic. An expert and a computer program collaborate to design a personalized learning curriculum for the learner in smart tutorial systems. Dialogue-based systems, on the other hand, continue to personalize learning by developing a dialogue with the system through expectations and misconceptions, in addition to

intelligent instructional systems (Arslan, 2020). Artificial intelligence allows for the creation of continuous environments to ensure the continuity of students' learning (smartphone, tablet, etc.). Thus, disturbances in education will be avoided, education will be transferred outside of time and location, making it more widely available, and students will be able to propose individual solutions to their specific needs (Alanoglu and Karabatak, 2020). It has been stated that while artificial intelligence saves time and money over using real people to determine students' individual characteristics, it will reduce the economic burden except for the initial investment, and computer systems will eliminate the risk of real people becoming biased due to the personal situations they are in when discovering individual characteristics (Kazu ve Özdemir, 2009). Individual and group learning can be accomplished through the use of artificial intelligence in children's education, the impact of disruptive factors in the environment is reduced, cooperative work contributes to the skills of respecting the rights of others, and permanent learning is increased (Akdeniz, 2019).

Virtual and augmented reality's fictional universe is having a growing impact on all aspects of Metaverse existence. Even though it is still under construction, its scope of influence and place on the agenda are significant. In the metaverse, the entire digital reality coexists, and there is no question of authority or reliance on a center (Çelik, 2022). They delegate significant tasks to educators regarding the existence of the cosmos and its correct use, how children are prepared, and their roles in proper learning and usage. It has been said that Metaverse can be used to create permanent learning in an active and live environment with programs produced in accordance with educational contexts and assuring the protection of children in the exploration of the virtual world (Hirsh-Pasek et al., 2022). Ensuring Metaverse secrecy, which improves and expands opportunities in fields such as education, business life, communication, and public services, poses challenges concerning data management. It is especially crucial to preserve children's physical and emotional health since it is considered that there are flaws in properly protecting children and their rights in surroundings that are not directly designed for children but are accessible to children. While the options it provides are expanding, it has been suggested that research on how adults and children will feel this process, how it will effect their mental health or cognitive development, which are considered independently, is required (Dick, 2021).

Understanding and employing artificial intelligence is a critical component of digital literacy. All parents and children must understand the proper use of digital technology as a prerequisite of the age. It will prevent purposeless orientations in particular by helping youngsters to understand and learn about artificial intelligence. Sensitivity to culture, cooperative learning, and peer learning are all significant aspects of artificial intelligence training. Children's ability to apply their creativity and imagination in relation to artificial intelligence can be evaluated in artificial intelligence education by what they reveal as a result of their creativity (Yang, 2022). Nowadays, searching for information on the internet through search engines has become a requirement for both adults and children. Although adults can make calls using a real keyboard, it looks to be a deceptive aspect for children. Children who use voice search have difficulty understanding the artificial intelligence-based feature and require the development of conversational search interfaces (Allen,

Yang, Pera, & Gadiraju, 2021). While artificial intelligence is becoming more prevalent in many aspects of life, it is critical to teach youngsters about it. youngsters's books, which are a vital aid in the development of youngsters, have been altered for this purpose. Children's books, which play an essential role in children's development, are being made more functional by integrating books with technology with the use of augmented reality. This will relieve youngsters of the boredom associated with printed publications, allowing them to actively study and experience theoretical information (Zhou & Li, 2021). It has also been said that wearable technological gadgets that sense emotion can assist parents in raising their children (McStay & Rosner, 2021). Within the scope of artificial intelligence and robotics for children (AIR4Children), artificial intelligence education is attempted to be delivered to children in a less expensive manner and with Montessori education philosophy through the use of open sources in order to ensure inclusiveness, equality, and fairness in children's access to artificial intelligence and robotics education (Montenegro et al., 2021). The mathematical reasoning, self-regulation and problem-solving skills, language development, and creativity of the students in the experimental group improved at the end of the coding and robotics training conducted with 39 experimental and 41 control group students in the 5-6 age group (Canbeldek, 2020). Furthermore, gifted students improved their problem-solving abilities and coding-based self-efficacy (Kılıçkıran, Korkmaz & Çakır, 2020). Children who use smart technologies for robotics, coding, and 3D design utilize gadgets with a concentration on games and production, whereas children who use them as consumers mostly use smart devices for social media. It was noted that program developers should create apps that can guide children with varying interests and talents toward production (Yücelyiğit and Aral, 2020). Due to challenges in education and financing in poor or less developed nations, artificial intelligence and robotics education for children continues at the pilot study level, resulting in inequality of opportunity in the education of children on this subject (Badillo-Perez et al., 2022).

Artificial intelligence has the potential to play a significant role in modern computer games. It has been argued that the ability to accelerate graphics, foresee the next move, and adjust actions may be in question (Nareyek, 2000). It has been said that artificial intelligence can perform acts such as giving features in games, developing units, spatial thinking, learning, and target selection (Gür, Ayden, & Yücel, 2019). A computer game recognizes a wide range of opponents, from simple repeats to overcoming the best player, analyses player behavior, and can make games more difficult (Iskandar, Diah, & Ismail, 2020). In game hardware, ray tracing technology is used to see pixels in three dimensions, Deep Learning Super Sampling (DLSS) technology is used to ensure that low and high resolution image quality is not compromised, and Generative Adversarial Network (GAN) technology is used to generate new data from existing data. It has been stated that using software allows for daily development (Evci, 2020).

In a study on distinguishing between living and non-living things, their communication with a dog and a robot dog was examined, and they found the dog more accepting and alive than the robot, spending more time with him, and half of the children with the robot couldn't decide whether the robot was alive or a computer,

whether the robot dog lived or not. It was claimed that the response to the question of whether he lived a little or not was given (Melson et al., 2005). The children in the study with the robot and stuffed toy dogs attributed similar meanings to the stuffed dog with the robot in different places, they treated the stuffed dog worse, they gave more verbal directions to the robot, they were more anxious about the robot's movements, and 25% of the children responded to the robot. Half of them identify biological characteristics to the robot, while two-thirds attribute mental states, social adaption, and moral status to the robot. It has been suggested that it is difficult for children to separate their realities from their imagined judgments (Kahn, Friedman, Perez-Granados, & Freier, 2006). While children's references to AI robots make definitions based on life situation judgments, it is thought that children with more experience attribute more intellectual features, and as children's experience with AI grows, they will be able to distinguish these entities from familiar objects or living things (Bernstein & Crowley, 2008).

4. Using Virtual Reality

Virtual reality technology is one of the artificial intelligence-based application fields. The greater the ability of the virtual reality technology to keep the virtual environment created for the individual free of external factors, the more successful it is considered. Some versions provide users with sensory feedback such as sound, smell, and touch (Aydn, 2018). Virtual reality is utilized to help youngsters maintain acceptable communication skills, boost academic success, gain social skills, and daily living skills (zdemir, Erbaş, & zkan, 2019). It is suggested that in virtual reality-created children's eating scenarios, modifications can be made on eating behaviors in real life, providing chances for parents and children in eating control (Persky et al., 2018). Using virtual reality in surgical and psychiatric illnesses in children and adults, as well as in disorder research, evaluation, and management, as well as cognitive behavioral therapy applications in clinical psychology; It is effective in a variety of conditions, including anxiety disorders, autistic spectrum disorder, psychoses, and post-traumatic stress disorder (Işıklı, Baran & Aslan, 2019; Yiğit & Sani-Bozkurt, 2021; Yıldırım & Çakır, 2020; Akdeniz, Ahçı & Soft, 2020; Blacksmith, 2018). Artificial intelligence has been employed in psychological examinations used in the evaluation of children's mental health, producing a natural space comparable to a play environment for children while saving time for specialists (Arslan, 2020). In one study, it was discovered that using virtual reality reduced the severity of pain in children whose blood was drawn. In painful treatments such as burn wound care, chronic wound dressing, lumbar puncture, and bloodletting, virtual reality glasses have been utilized as a distraction method (Aydn, 2018). On the other side, it is predicted that persons suffering from digital addiction will benefit from the future profession of cyborg psychologists, who will assist in distinguishing between the physical and virtual worlds (Aksakal and Ülgen, 2021).

Early diagnosis is critical in autism spectrum disorder (ASD), and an algorithm built utilizing artificial intelligence can be used to diagnose ASD in children. It is supposed to greatly aid therapists' work by measuring children's stereotyped movements using artificial intelligence. Step-by-step skill training is provided for children with ASD. It is feasible to determine the gaps between the steps that provide the skill steps and which steps have been accomplished and which steps have not

been achieved using an artificial intelligence-based program (Sağdıç, Sani-Bozkurt, 2020). Artificial intelligence can be used to create controlled environments in children with ASD, reducing anxiety that may be experienced in real-life circumstances. Children may find it easier to interact with robots than with humans. While keeping object-like simplicity, AI can deliver human-like social cues. It can serve as a child's playmate, behavioral mediator, social mediator, and therapist (Huijnen, Lexis, Jansens, & de Witte, 2016). Children developed game concepts, did not insist on limited themes, and performed pretend games by following game themes, according to a study conducted by playing open-ended imitation games in augmented reality with children with ASD and language delay (Bai, Blackwell, & Coulouris, 2013).

Children gain basic interaction skills through robot-human contact in research on the use of autonomous robots in the treatment and education of children with autism, and they can also utilize robots as a communication bridge between them and their caretakers. After the youngsters became acquainted with the robot, they welcomed the researcher into their world and shared with him. They were said to have poor verbal communication skills in the months that followed. Long-term, free, stress-free connection with robots has been shown to result in spontaneous and proactive significant interactions in youngsters (Robins, Dautenhahn, Boekhorst, & Billard, 2005). A teleoperated child care robot named ChiCaRo, on the other hand, was utilized to anticipate the innate temperament features of youngsters (Sano, Horii, Abe, & Nagai, 2021). Different results were obtained that emphasized the importance of individual treatment in all children, which were recorded through the chest strap with the electrocardiogram sensor, through artificial intelligence (Billeci et al., 2018) in order to create an individualized and effective treatment plan for children with ASD. Furthermore, attention deficit and hyperactivity disorder, as well as anxiety disorders, were studied using comparable artificial intelligence-based data collection approaches (Welch et al., 2022).

A study was undertaken at the University of Michigan to predict the anxiety and depression levels of children in early childhood using machine learning. According to reports, childhood anxiety and depression (internalizing disorders) are frequently misdiagnosed, raising the risk of substance abuse, self-harm, and suicide. When the data from the study's three-minute speaking test was examined by machine learning, it was discovered that 80% correctly identified children with internalization disorder. Approximately 40% of the data is of poor sound quality (there are environmental sounds that affect the main sound). By closely examining the most distinguishing speech traits of internalizing disorder, including afflicted children's low-pitched noises, reproducible speech inflections, and content, it was discovered that they exhibit high-pitched responses to unexpected stimuli (McGinnis et al., 2019).

5. Ethical Issues and Children's Rights in Artificial Intelligence

Aside from the numerous benefits of using artificial intelligence in mental health, the difficulties in clinical integration of artificial intelligence, the existence of ethical gaps and the abuse of these gaps, as well as respecting and protecting patient autonomy, transparency in the use of algorithms, and the absence of long-term effects on individuals are all regarded as risks in the use of artificial intelligence (Fiske, Henningsen & Buyx, 2019). The corporate and public sectors are debating

the ethical and technical standards that will be used in the application of ethics in artificial intelligence. A plethora of texts have been proposed to govern ethical artificial intelligence. Transparency, justice and equity, non-harming, responsibility, and privacy are central to ethical values. There are questions about how the principles are interpreted, why they are important, how they should be applied, which ones should be prioritized, how conflicts between the principles will be resolved, who will do the ethical oversight, and how researchers and institutions will comply with the ethical guidelines in these determined titles (Jobin, Ienca & Vayena, 2019).

Intelligent toys/robots linked to the Internet can have negative consequences on a technological, societal, and individual level. On a technical level, these toys acquire, operate, and transfer data in the same way that computers do. Children do not understand how data is processed. Individually, they cause social isolation, overconfidence, and attachment, and prioritize purchase over the best interests of the child through commercialization by generating need profiles of youngsters. At the social level, issues such as normalizing child surveillance, a lack of artificial intelligence literacy that leads to inadequacies in guiding children about use, inequality in the purpose and amount of use based on socioeconomic status, and commodification of child identities may arise (Fosch-Villaronga, van der Hof, Lutz & Tamò Larrieux, 2021). According to the findings of a study conducted with kindergarten students, ethical issues such as who is responsible for the child's injury and how to ensure the privacy of the private information that children reveal as a result of their interaction with robots may arise when working with interactive robots (Tolksdorf et al., 2021). Another issue identified was gender inequality. In the same way that children are taught about gender roles in the traditional world, sexism emerges in the construction of artificial intelligence; for example, it has been suggested that the artificial intelligence utilized in the assistant service is represented by the feminine gender (Çifci, 2020).

Children are persons with specific rights that must be protected both in the real world and online. Children's rights relate to the digital realm as well (Livingstone, 2021). Children use the internet to obtain health information (particularly about their own developmental period), state that being exposed to cyberbullying will cause problems in real life, privacy is lost, play and leisure time change, they show their abilities and skills online better, they see access to the internet as a right, and it was emphasized that the language barrier should be eliminated on internet platforms (Kidron, 2021). It is critical for parents to understand the effects of artificial intelligence on children's rights in order to properly advise and safeguard their children. Because, while there are child rights-centered institutions in artificial intelligence systems, they are small in number, and the initiative is left to the institutions themselves (Atabey and Berber, 2021). It is stressed that toys and wearable technology, which are developed to observe children's emotional lives and collect information, can be followed by children, can manipulate children based on their knowledge, and children can be damaged by the power imbalance between companies and children. It has been suggested that parents are vulnerable to data literacy and protecting their children (McStay & Rosner, 2021). For example, it has been said that assuring privacy, accountability, psychological damage to children, and it can lead to emotional and psychological misdirection of the child in the same

environment with the artificial intelligence robot (Sharkey & Sharkey, 2010). With the South Korean Declaration of Robot Ethics, the manufacturer and produced product standards, user rights and obligations, and robot rights and responsibilities have all been studied. It was stressed that both consumers and robots should be held accountable and protect one another (Caşın, Dursun & Başkır, 2021). Because parental control may disappear and cause security issues in children's use of artificial intelligence-based online applications, studies have addressed the roles of parents in online safety education, setting boundaries, and setting time for their children, but virtual can be a communication tool between parents and children, approaching each other in a virtual way and a real communication door. It has also been stated that it is possible to open (Downing, 2018).

"Sharenting" is one of the places where children's rights are violated. It is a situation in which parents of children who do not use smart devices or social media themselves breach their children's privacy, the right to be forgotten, and lead to child abuse through their social media posts (imke, Gürkan, & Polat, 2018). Social media violates children's personal rights through unauthorized posts, unpleasant comments, and editing posts can cause psychological injury to children (Serin, 2019). With the near-complete loss of privacy and the uncontrollable flow of information, the inability to utilize social media consciously causes harm. Sharing and doing so voluntarily, as a need of social media's existence, results in the distribution of knowledge and data for business structures (Bostancı, 2019). Parents, without their will, prepare their children for a world full of fears and potential troubles for their future by sharing identification information, history, and images through their newly born offspring (Erişir and Erişir, 2018).

6. CONCLUSIONS

Artificial intelligence is becoming more powerful by the day, thanks to the internet of things, big data, and information generation. The goal now is to construct clever and learning programs on the route to creating a smart robot. The effects of the advances can be seen in many sectors of social life. Some of these implications include intelligent sensors, blockchain applications, the construction of smart cities, cloud computing, and the existence of big data. While artificial intelligence will take over the majority of labor-intensive employment, new business opportunities will emerge. Artificial intelligence shapes the evolution of societies based on creativity and knowledge (Öztemel, 2020). Artificial intelligence, in addition to its useful qualities, has ethical issues. Individualization in school, lowering the danger of leaving out; using machine learning to detect criminals in order to decrease suicide risk by monitoring patients, successfully applying therapies, or providing justice; While there are benefits to determining customer needs and interests and making product arrangements for the shopping sector, it may create legal and ethical issues in the discrimination of students in education, discrimination in health services and insurance, manipulating consumption patterns by secretly monitoring consumer information, and monitoring and collecting information without a search warrant (Martin, 2020). According to BBC news in 2014, famous physicist Stephen Hawking claimed that while primitive-form artificial intelligences are very beneficial, the

development of full artificial intelligence may lead to the extinction of the human race (Cellan-Jones, 2014). While artificial intelligence systems find a place in all areas of our lives, it was stated that it was necessary to train all individuals in society as individuals who could understand and adapt to artificial intelligence systems, and it was stated that they would provide great and positive human transformations as long as they are used for the right purposes (Coşkun and Gülleroğlu, 2021).

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THE RELATIONSHIP BETWEEN PSYCHOLOGICAL FLEXIBILITY, RESILIENCE AND COVID-STRESS IN UNIVERSITY STUDENTS OF PAKISTAN

NIMRA SAIF
[a] *DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF SARGODHA, PAKISTAN*

Abstract

The present study investigated the relationship between of psychological flexibility, resilience and COVID-stress in university students of Pakistan. The study was based on cross-sectional survey research design. Participants were university students (N=303). Three self-report measures including The Psychological Flexibility Scale (Ben-Itzhak et al., 2014), Brief Resilience Scale (Smith et al., 2014) and the COVID Stress Scale (Taylor et al., 2020) were used for data collection. Pearson Product Moment correlation found significant negative correlation between psychological flexibility and COVID-stress. There was also significant negative correlation between resilience and COVID-stress. Multiple Regression analysis was run and showed predictive impact of resilience and psychological flexibility on COVID-stress in university students. The findings empirically established that increasing the ability of psychological flexibility and resilience of individuals can overcome the stress related to COVID-19 pandemic. The study is an important addition in the existing body of knowledge on the role of positive psychological abilities in dealing with stressful events.

Keywords: *Psychological flexibility, Resilience, COVID-stress, university students.*

1. INTRODUCTION

COVID-stress

In the beginning of 2020, the whole world had faced a great threat of quick spread of a very unique Coronavirus (COVID-19). The Coronavirus (COVID-19) disease was a highly contagious illness caused by a virus named Coronavirus. Millions of people got infected with this infectious disease. Large number of individuals lost their lives due COVID-19. In this horrible situation where the physical health of people was affected their mental health was also affected at large scale. stress related to COVID pandemic had increased among individuals.

COVID pandemic had became an alarming situation because the number of cases were increasing day by day. Governments had implemented strict measures of quarantine, social distancing, lockdowns, and closure of business, it led to the

Corresponding author: Nimra Saif
E-mail address: nimrasaif77@gmail.com

negative effects on health and economy for a long period of time. There was no doubt that this was a tough situation because stress causing factors were new, there were no prior warnings or preparations to overcome the harms of this alarming situation, no prior vaccination for this virus was available. It was also uncertain how this situation would affect the future life of individuals and how would people be able to live their life normally. So due to this uncertainty it was difficult to make any plan for the future. There it made this situation more stressful. (Vinker et al., 2020). one research analyzed that approximately 35% out of total 52,730 participants in their research showed psychological problems including high level of stress due to pandemic. (Mazza et al., 2020).

Some researchers also suggested that long term increased in stress among individuals would be major risk factor for overall mental health like it can contribute to high level of anxiety, depression and substance use problems. It can also contribute to the physical problems which occur for long term and effect life of person at high level. So, in such way it would increase the cost of health facilities. (Cooke, J. E et al., 2020).

Psychological Flexibility

Psychological flexibility can be defined as the ability of a person to have connection with present time, being watchful of emotions, feelings and cognitions. it also includes the negative thoughts and emotions and welcoming these thoughts and performs actions that are according to individual values. Simply psychological flexibility means a person accepts his thoughts, his emotions and performs actions for long-term goals rather than for short-term thoughts, feelings and values that may be associated with avoiding negative experiences and tactics to control negative events and thoughts. (Tiziana et al., 2019).

Acceptance and Commitment Therapy

Steven C. Hayes, a professor of Psychology at the University of Nevada, established an Acceptance and Commitment Therapy (ACT) in 1986. Acceptance and Commitment therapy is psychological based intervention that is related to the field of modern Behavioural Psychology. It uses the acceptance and mindfulness procedure and also the behaviour changes and commitment procedure to develop a psychological flexibility. It is an important technique to optimize psychological flexibility to help a person to develop the mindfulness skills that are important to live and perform behaviour according to his personal values. Professionals of ACT help individuals to explore the ways in which their efforts to decrease, maintain and control emotional experiences can be challenging for them. When a person understands his challenges, he becomes able to create a space to perform value-based behaviours and increase his mental and physical wellbeing. (Haris, 2013).

The basic goal of the ACT is to provide help to a person that his psychological pain can be normal and he should live a happier and healthier life by changing his point of view about the pain and sufferings. (Lapilusa, 2018).

Resilience

Resilience can be defined as the ability of a person to adapt positively and balance or reestablish his mental health even in times of adverse situations. Some researchers describe resilience as a secure factor for a person and include basic mechanisms that play an important role in promoting mental health of a person even

if negative life events are present that may increase the chances of developing mental disorders. There are various paths that lead towards resilience. These pathways sometimes include the link between physical, inherited, psychological characteristics and social support of contexts like family, friends, school and large social levels. (Herrman et al., 2011)

Resilience Doughnut Model

Many times, before, a health professional Lyn Worsely created a tool that was a simple and action related instrument that was used to develop resilience and it proved helpful for children, adolescents and adults. This model is known as resilience doughnut. And described in her book titled and is outlined in her book, "*The Resilience Doughnut: The Secret of Strong Kids' '.* (Sue, 2013). The shape of this model is like a doughnut. It has two circles; one is inside and other is outside. Both circles show different characteristics. Inner circle of a model includes the inner features of a person that are related to his personal resilience. Outer circle described seven parts that shows outer environmental factors that can affect the individuals. When this model is used for adults, it shows connection of their newly developed personal identity, social life and belief of their strength with environmental settings. When a high level of trauma is considered then this model describes the impact of trauma on an individual's knowledge of skills and at the same time to develop the helpful ways in their surroundings to reestablish the competence. (Worsley, 2015).

2. REVIEW OF LITERATURE

Some studies showed that during the sudden increase of the viral epidemic almost 10 to 30 % people were stressed about catching that virus. Similarly, with the shutdown of business, schools and other public places negative emotions among people increased. Researches that investigated the psychological effect of SARS epidemic on people that were not affected with virus found that more psychological problem were occurred among young adults. one of those problems included high level of self- blame, and stress (Wang et al., 2020).

Studies investigated effects of psychological flexibility revealed that it maintained the relationship between mental wellbeing and stress. It means that it has helped people to cope with stress after stressful events. Results of various studies showed that the COVI-19 pandemic was unexpected and this negative event increased the general stress among individuals. But that pandemic related stress decreased when two important components of psychological flexibility were added in people's mental health. These components included high openness to experience and high behavioural awareness. These two components decreased the general and pandemic related stress regardless of age and gender of person. (Kroska et al., 2020).

Results of one of the studies that showed the relationship between psychological flexibility and COVI-19 related risk factors found that, preventive measures such as lock down and mental wellbeing of individuals were according with the previous studies that described the similar effect of daily life stressors and major life events on mental wellbeing of individuals (Pakenham et al., 2020).

Dealing with the stresses during epidemic demands from a person to be aware about what was accruing and about the situation that influenced him. (Devi, 2020). researchers found that resilience was a basic factor that impacted the mental functioning of individuals during the adverse situations. It was one of the most important qualities of a person that helped him to face and deal with the COVID-stress. One study found that resilience had an impressive impact on physical and mental recovery of a person during COVID epidemic. To recover from COVID pandemic individuals needed a high level of resilience at personal level and group level. (Chen, 2020).

Rationale

The resolution of this research was to discover how resilience and psychological flexibility was related to COVID-stress. During the time of COVID pandemic many studies were conducted mostly researches focus on negative mental health related outcomes of COVID-19. Some researches focus on children, health workers and older adults. few studies were conducted on western population about the effect of positive psychological factors to reduce the COVID related stressors in university students. in Pakistan no such study was conducted that focus on university level student and discussed positive psychological abilities. Present study was unique study because it focused on positive psychological abilities in the time of very stressful event. psychological flexibility and resilience were the two important psychological factors that could be related to positive mental health outcomes.

objectives

Objectives of study was

- To examine the relationship between psychological flexibility, resilience and COVID-stress among university students
- To examine gender differences in terms of psychological flexibility, resilience and COVID-stress.
- To determine whether psychological flexibility and resilience would be the predictors of COVID-stress

Hypotheses

1. There would be negative relationship between psychological flexibility and COVID-stress among university students of Pakistan
2. There would be negative relationship between resilience and COVID-stress among university students of Pakistan.
3. There would be gender difference in terms of psychological flexibility, resilience and COVID-stress.
4. Psychological flexibility and resilience would predict the COVID-stress.

3. Method

Research design

Present study was cross-sectional study. It was survey research design.

Participants

In present study participants consisted of 303 university students belonging to Pakistan. Among 303 university students 80 were males and 223 were females. Age

range of the sample was 20-35. Data were collected using purposive sampling technique.

Instruments

The Psychological Flexibility Scale

The Psychological Flexibility Scale is a 19 items self-report measure that measure psychological flexibility. It was developed by Ben-Itzhak and his colleagues in 2014. In this present study the English version of the scale was used. Cronbach's alpha for psychological flexibility was α = .80. response format was 5-point Likert scale. There were no reverse coded items in this scale. High score on this scale predicts high psychological flexibility and low score predict low psychological flexibility.

Brief Resilience Scale

Brief Resilience Scale is a 6 items self-report measure that measure resilience. It was developed by Smith and his Colleagues in 2008. Age range for the scale was 19-62 years. Scale consisted of three positively worded items and three negatively worded items to minimize response biasness. Internal reliability of scale was α = .80 - .90. response format was 5-point Likert scale, High scores indicate high resilience.

COVID Stress Scales

COVID Stress Scales was developed by Taylor and colleagues in 2020. This scale consisted of five subscales including, (1) COVID dangers and contamination fears (12 items). (2) COVID fear about economic consequences (6 items). (3) COVID xenophobia (6 items). (4) COVID compulsive checking and reassurance seeking (6 items) and (5) COVID traumatic symptoms (6 items). It consisted of 58 number of items. Response format was 5-point Likert-type scale that range from 0 (not at all) to 4 (extremely). Internal reliability was α > .80. Higher scores indicate high level of stress due to COVID-19 pandemic. The scales were intentionally designed so they could be readily adapted for future pandemics.

Procedure

Permission to conduct the study was taken from Department of Psychology University of Sargodha. Data for the present study was collected from students of different universities of Pakistan. participants were contacted personally for collection of data. Online data collection mode was used in the study. As due to situation of lockdown during pandemic face to face data collection was very difficult so online mode was more feasible for collection of the data for which google form was created to collect data. Then link to fill out the google form was sent to different social media networks. Basic information regarding nature, purpose and objectives of the research were shared with participants. It was made clear that information of participants will remain confidential and will solely be used for research purpose. The queries of the participants about questions were answered. Participants consumed 7-10 minutes in completion of scales.

4. Results

The present study aimed to examine the relationship between psychological flexibility, resilience and COVID-stress among university students. Data analysis was carried out using SPSS- 23. Initially the demographic characteristics were

identified through frequencies and percentages. Descriptive statistics and alpha reliability coefficients were computed. Pearson Product Moment correlation was computed to examine the correlation between variables. Multiple regression analysis was conducted to examine the predictive effect of psychological flexibility and resilience on COVID-stress among university students. The independent sample t-test was applied to compare the means regarding the study variables.

Table 1

Frequency and Percentage of Participants (N=303)

Demographic variables	Frequency (*f*)	Percentage (%)
Gender		
Male	80	26.4
Female	223	73.6
Age		
Below 22	145	47.9
23 and above	158	52.1
Education		
Undergraduates	160	52.8
Graduates	80	26.4
Postgraduates	63	20.8
Marital status		
Married	39	12.9
Unmarried	264	87.1
Your number in siblings		
First child	122	40.3
Middle child	98	32.3
Last child	83	27.4
Only child		
Socioeconomic status		
Lower class	34	11.2
Middle class	255	84.2
Upper class	14	4.6
Are you suffering from COVID-19?		
Yes	25	8.3
No	278	91.7
Do you live with someone who has suffered / suffering from COVID-19?		
Yes	60	19.8
No	243	80.2

Table 1 shows frequency and percentage of all demographics used in the present study.

Table 2

Descriptive Statistics and Alpha Reliabilities for all study variables (N = 303)

Scales	Items	*M*	*SD*	*α*	Range		Skewness
					Potential	Actual	
Psychological flexibility Scale	19	48.30	15.98	.95	1-5	20-94	.786
Brief Resilience Scale	6	18.55	3.31	.73	1-5	6-28	.085
COVID-stress Scale	36	56.55	31.98	.96	1-5	.00-144	.271

The result in Table 2 demonstrates that there are significantly high alpha reliability coefficients for psychological flexibility, brief resilience and COVID-stress. Univariate normality analysis confirmed that all the scores were normally distributed i.e., value of skewness was less than 2.

Table 3

Correlation Matrix for all the Variables Used in the Study (N = 303)

Variables	1	2	3
1(Psychological Flexibility)	-		
2 (Resilience)	.269**	-	
3 (COVID-stress)	-.278**	-.217**	-

Table 3 shows inter-correlations among scales. Pearson Product Moment correlation was performed and results showed that that psychological flexibility, has significant positive correlation with resilience. Additionally, psychological flexibility has significant negative correlation with COVID-stress, meanwhile resilience has significant negative correlation with COVID-stress.

Table 4

Regression Analysis for predicting COVID-stress from Constructs of psychological flexibility and resilience (N= 303)

variable	*B*	*S. E*	β	*P*

Psychological flexibility	.47	.11	.23	.000
Resilience	1.47	.14	.15	.008
R^2	.07			
ΔR^2	.09			

To investigate predictive impact of constructs of psychological flexibility and resilience on COVID-stress, multiple regression analysis was carried out. The findings confirmed that psychological flexibility significantly predicted COVID-stress (B=.47, p=.000, R^2=.07 F (1,301) =25.11). resilience significantly predicted COVID-stress (B=1.47, p=.008, R^2=.07, F(1,301)=16.43). β value indicated 23% relative influence of psychological flexibility on COVID-stress and 15% relative influence of resilience on COVID-stress. Therefore, psychological flexibility and resilience have been identified as significantly predicting COVID-stress among university students.

Table 5

Comparison of Male and Females on Psychological Flexibility, Resilience and COVID-stress (N=303)

	Male (n= 80)		Female (n=223)			95% CI		Cohen's d
Variables	*M*	*SD*	*M*	*SD*	*t (301)*	*LL*	*UL*	
Psychological Flexibility	49.23	16.24	47.96	15.91	.61	-2.83	5.37	0.07
Resilience	18.93	3.46	18.42	3.26	1.19	-.33	1.36	0.16
COVID-stress	60.51	34.90	55.13	30.82	1.29	-2.81	13.57	

Results in Table 5 demonstrate the mean gender differences and effect size on psychological flexibility, resilience and COVID-stress. The mean difference is found to be nonsignificant on all variables. value of p was greater than .05 for all study variables

5 Discussion

Present research investigated the relationship between psychological flexibility, resilience and COVID-stress among university students of Pakistan. Results of the study showed that the first hypothesis "psychological flexibility would be negatively related to COVID-stress" was supported in the present study. Findings revealed significant negative relationship between psychological flexibility and COVID-

stress. Results were consisted with existing literature that found that psychological flexibility plays an important and crucial role in decreasing COVID related stress so it serves as important factor in health services. Study conducted on adults (N=1035) in Switzerland found that psychological flexibility was related to daily life stressors, stressful events in life at one side and physical health outcomes, psychological health and mental wellness on other side Results of research on Swedish papulation showed that 45.6 % individuals had high level of stress, depression and stress and low level of psychological flexibility. (McCracken et al., 2021).

The second hypothesis "Resilience would be negatively related to COVID-stress" was supported in present study. Findings of the research confirmed negative relationship between resilience and COVID-stress. These results were in line with past research which found that in situation of COVID-19 epidemic resilience support individual to bear the stress of pandemic in effective way. Available researches described the secured role of resilience in person during harmful events and viral outbreaks showed that increasing the capacity of coping can be helpful for person to handle and manage the stressors in effective way. Optimizing resilience in health care workers during COVID pandemic was seen as helpful to protect their mental health and psychological wellbeing. (Labrague et al., 2020).

Third hypothesis "There would be significant gender differences in psychological flexibility, resilience and COVID-stress". Results shows that gender differences on psychological flexibility resilience and Covid-stress were non-significant. These results were consistent with previous studies that showed individual factor like gender differences during the time of pandemic has no significant relationship with psychological flexibility and COVID-stress (Dubey et al., 2020). Similarly, another research analysed that gender was not found to be significant factor in relationship between resilience and COVID-stress as resilience plays a buffering role against stress and it can be seen in both genders in same manner. (Braziley et al., 2020)

The fourth hypothesis that psychological flexibility and resilience would predict the COVID-stress was supported by the findings of the study. multiple regression analysis showed significant predictive impact of psychological flexibility and resilience on COVID-stress. these findings were consisted with previous studies as one research conducted on army personnel found that psychological flexibility decreased the level of depression and post-traumatic stress among army employs when they come back after the battle (Kroska et al., 2020). another research revealed that resilience decreases the impact of stress related factors on the psychological health of person. A study investigated the relationship between positive emotions, negative emotions and person's psychological health resilience was used as mediator in the study. Results of study showed that resilience decreased the impact of negative emotions and increased the impact of positive emotions on individual's mental wellbeing. In another study of 540 civil servant researchers found that large level of stress related work was influenced by resilience as the resilience decrease the impact of stress on their work quality. (Yıldırım, et al., 2020).

6. Conclusion

Basic purpose of this research was to find out the relationship between psychological flexibility, resilience and COVID-stress in university students of Pakistan. findings revealed significant negative relationship between psychological flexibility and COVID-stress. the relationship between resilience and COVID-stress was also found to be significant negative. resilience had significant positive relationship with psychological flexibility. however present study found no significant gender differences in term of study variables. So, in order to handle stressors related to COVID pandemic people must pay attention to increase psychological flexibility and resilience. Healthcare communities should educate general public to develop psychological flexibility and resilience abilities in this uncertain situation of pandemic.

Limitations and suggestions

First limitation of present study is that it was based on survey method in which cross-sectional design was used to collect information from university students. Survey design has usually low internal validity although it has high external validity. it does not talk about the casual relationship among variables. Future studies should use alternative research designs to assess relationships among variables. Second limitation of present study is that the scales use in study were in English language. It was difficult for Urdu speaking individuals to understand these scales. It would be appropriate in future research to carry out Urdu translation, adaptation and cross-language validation of these scales.

Implications

The present study is applied and up to date research. it has major contribution to the mental health of students who are affected by current COVID-19 pandemic on large scale. Government and health care communities should develop various programs and strategies to increase the positive cognitive abilities including psychological flexibility and resilience to cope with stress related to COVID pandemic among students.

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PSYCHOLOGICAL FACTORS OF LAW ENFORCEMENT ON DRIVER BEHAVIOR: A PILOT STUDY

EMIL-RĂZVAN GÂTEJ[a], IRINA BAKHAYA[b], DAN VASILIU[c]
[a] *Police Academy, Bucharest, Romania,* [b] *Police Academy, Bucharest, Romania,* [c] *Ion Creangă Pedagogical State University, Chisinau, Republic of Moldova*

Abstract

This research aims to reveal the psychological factors that influence law enforcement officers' behavior towards drivers during traffic stops and how these interactions impact driver behavior. The study uses a controlled simulation environment to explore the potential effects of various psychological factors on both law enforcement officers and drivers. The results will contribute to a deeper understanding of the complexities involved in these interactions and may shape training for both LEO`s and drivers. Also the results of such a study may be a scientific base for policy initiatives for law enforcement agencies.

Keywords: *Law enforcement, traffic education, driver behaviour*

1. INTRODUCTION

Traffic stops are routine encounters that occur daily between law enforcement officers and drivers. These interactions can be influenced by various psychological factors that may impact the behavior of both parties involved. Understanding these psychological factors can shed light on the dynamics of law enforcement-driver interactions and help improve community relations and safety on the roads.

Law enforcement psychology plays a crucial role in traffic safety by understanding and addressing the psychological factors that influence driver behavior. Traffic safety is not solely dependent on obeying traffic laws; it also involves recognizing and mitigating the psychological aspects that contribute to accidents and violations. Here are some ways in which law enforcement psychology influences traffic safety:

Law enforcement psychologists may be involved in developing and implementing driver assessment programs. They can evaluate potential drivers' cognitive abilities, decision-making skills, and emotional stability to ensure they are fit to operate a vehicle safely. Additionally, psychologists can contribute to designing effective driver training programs that address risk perception, hazard awareness, and defensive driving techniques.

Law enforcement officers, guided by principles from psychology, can utilize effective communication and de-escalation strategies during traffic stops. These approaches can help reduce confrontations and aggressive behaviors, making the road safer for both officers and drivers.

By studying driver behavior and the psychological factors that contribute to risky driving, law enforcement can develop targeted interventions. For example, they may

Corresponding author: Emil Razvan Gatej
E-mail address: emilrgatej@gmail.com

address issues like distracted driving, aggressive driving, or impaired driving through awareness campaigns and enforcement efforts. (Johnson, A., 2020).

In cases of serious traffic violations or accidents, law enforcement psychologists can assist in reconstructing events by considering human factors like perception, attention, and decision-making. This analysis can help identify contributing factors and design preventive measures.

Law enforcement psychologists can collaborate with public safety organizations to design road safety campaigns. By understanding the psychological barriers to safe driving, these campaigns can be tailored to influence behavior positively and encourage responsible driving habits.

Law enforcement psychology can address the issue of impaired driving due to alcohol, drugs, or other substances. Understanding the underlying reasons for such behavior can aid in developing effective deterrence strategies and rehabilitation programs for offenders.

Law enforcement psychologists can provide valuable insights and research to inform traffic safety policies. Their expertise can help policymakers create evidence-based regulations and initiatives aimed at reducing accidents and improving road safety.

Traffic Safety Education Programs are needed in the context of Romanian traffic statistics. Law enforcement psychologists can contribute to developing educational materials for schools, driving schools, and community organizations. By incorporating psychological principles into these programs, they can enhance the effectiveness of messages promoting safe driving behaviors. (Anderson, R., & Lee, C., 2018)

In conclusion, law enforcement psychology plays an essential role in traffic safety by considering the human element in driving behavior. Understanding the psychological factors influencing drivers allows law enforcement to develop targeted interventions, enhance training, and design effective road safety campaigns to reduce accidents and promote safer driving habits.

Law enforcement psychology in traffic safety refers to the application of psychological principles and techniques to enhance law enforcement officers' effectiveness in promoting traffic safety and managing traffic-related situations. It involves understanding human behavior, decision-making, and cognitive processes to improve law enforcement strategies, public safety, and reduce the number of traffic accidents and violations.

Key aspects of law enforcement psychology in traffic safety include behavioral Analysis: Law enforcement psychologists analyze driver behavior to identify patterns, risk factors, and potential causes of traffic accidents. By understanding why certain behaviors lead to accidents or violations, law enforcement can tailor their enforcement strategies and educational initiatives more effectively. (Johnson, A., 2020).

People often underestimate the risks associated with certain driving behaviors. Law enforcement psychologists study how to communicate risk effectively to the public through educational campaigns, messages on electronic signs, or social media, with the goal of influencing drivers to adopt safer driving practices. (Williams, S., & Brown, M., 2017)

Understanding the psychological factors influencing driver decision-making is crucial for law enforcement. Impulsivity, distraction, fatigue, and emotional states can all affect driving behavior. Law enforcement psychologists work to develop strategies to reduce risky decision-making and increase compliance with traffic laws.

Law enforcement psychologists consider cognitive limitations, such as attentional capacity and perception, that can impact driving performance. They provide insights into designing road infrastructure and traffic regulations that accommodate human cognitive abilities to minimize accidents. (Smith, J. ,2019)

Law enforcement psychologists contribute to the development of specialized training programs for traffic officers. These programs aim to improve their ability to recognize potential traffic hazards, identify impaired drivers, and handle high-stress situations effectively.

Interventions for Traffic Offenders: Psychological interventions, such as driver rehabilitation programs or educational courses, may be recommended for certain traffic offenders. These programs aim to address underlying behavioral issues and prevent repeat offenses. (Smith, J.,2019)

In cases of serious accidents, law enforcement psychologists may be involved in reconstructing the events leading to the collision, considering human factors that may have contributed to the incident.

By incorporating insights from law enforcement psychology into traffic safety strategies, law enforcement agencies can create a safer driving environment, reduce accidents and fatalities, and encourage better compliance with traffic laws and regulations. Ultimately, the goal is to protect the public and improve the overall safety on the roads. (Williams, S., & Brown, M., 2017)

2. OBJECTIVE AND HYPOTHESES

2.1. Objective

The main objective of this study is to reveal the importance of the psychology of law enforcement and its effects on drivers behavior.

2.1.1. Hypotheses

H1.1. There is a statistically significant difference between the parametes of anxiety as state of the two experimental groups.

H1.2. There is a statistically significant difference between physiologycal parameters of the two experimental groups.

3. MATERIAL AND METHOD

Designing the Simulation Environment:

A controlled virtual simulation environment was created, simulating realistic traffic stop scenarios.

Law enforcement officers (LEOs) and drivers will be represented as making the interactions as lifelike as possible.

Different variables will be introduced into the simulation to represent psychological factors, such as LEO's demeanor, communication style, perceived authority, and racial bias.

The procedure in order to test our hyphotesis were based on two main situations:

A situation in which the subject was in the role of the driver of the stoped vehicle the other experimental conditions in which the subject was the one who stops the vehicle and try to explain how important is the defensive driving behavior. In order to mantain experimental control a very high level of safety it was used a driving simulator made by one of the authors 10 years ago named ERGASIM, a real vehicle equiped with electronic steering wheel and a LCD screen instead of the windscreen.

Both experimental groups were conected to the biophysiologic equipment and after that they filled in a psychological test for anxiety.

Participants:

Volunteer participants will be recruited to take part in the simulation. Two groups of participants will be included: 25 will be in the role of LEOs and 25 will be in the role drivers.

Data Collection:

During the simulation, participants were monitored for physiological responses (e.g., heart rate, skin conductance) to measure stress and arousal levels.

Audio and video recordings of the interactions were collected for later analysis. After the simulation, participants will be given surveys to assess their perceptions, emotions, and attitudes during the encounter.

Analysis:

The physiological data was analyzed using SPSS to reveal and assess significant differences between the two experimental groups regarding stress levels and emotional responses during the interactions. The effect size was calculated with Effect Size Calculator software. (Wilson, 2001).

The audio and video recordings will be reviewed to analyze communication patterns, non-verbal cues, and behaviors displayed during the traffic stops.

Survey responses will be analyzed to understand the participants' perceptions and attitudes towards law enforcement.

The experimental study is expected to reveal how psychological factors can impact law enforcement officers' behavior during traffic stops and the subsequent effects on driver behavior. The findings may shed light on potential sources of tension or bias in these encounters and highlight areas for traffic education and important information that may be shared in order to change drivers behavior.

Instruments

The Anxiety level was revealed with STAI psychological test. State-trait anxiety inventory STAI was developed by Spielberger in 1968. It consists of two self-assessment scales for measuring two distinct concepts regarding anxiety: state anxiety (A-state) and trait anxiety (A-trait) (Spielberger, Gorsuch & Lushene, 1970). Scale Y-1 feature consists of 20 descriptions (example: I feel calm, I feel secure) on which people express how they feel in general on a scale of 1-5 where (1-almost never; 5-almost always). Scale Y-2 state also has 20 descriptions (example: I feel pleasant, I feel rested) but the instructions require the subjects to indicate how they feel at a given moment on a scale of 1- 5 where (1-almost never, 5-almost always). Researchers can use the A-state to determine current levels of anxiety induced by stressful experimental procedures or as an indicator of the level of self-control (Spielberger, Gorsuch & Lushene, 1970).

To measure the blood presure there was used a blood presure monitor. Blood pressure is the pressure exerted by the blood on the walls of blood vessels. Normal blood presure is between 120-129 mmHg systole, and 80-84 mmHg diastole.

For measuring the level of oxygen saturation or oxygen levels in the blood a professional puls oximeter. The pulse oximeter is a small, non-invasive, painless medical device that measures the level of oxygen saturation or oxygen levels in the blood. It can quickly detect even small changes in the efficiency of oxygen transport to the farthest extremities of the heart, including the legs and arms. The purpose of using a pulse oximeter is to check how well the heart is pumping oxygenated blood through the body. The procedure is not painful and thus, the pulse oximeter will be able to show the level of

oxygen saturation, but also the heart rate. Normal blood oxygen levels are between 95-100%, and the heart rate between 60-80 bpm at rest.

4. RESULTS

1st Hypothesis Based on the results shown above, the research hypothesis that assumes significant differences of anxiety as trait for a sample of 50 subjects (Tab. 1).

Table 1. Descriptive statistics for 1st Hypothesis

Group Statistics

	COD	N	Mean	Std. Deviation	Std. Error Mean
AS	1.00	25	43.11	.001	.001
	2.00	25	54.34	.001	.001

Results on the anxiety scale (Tab. 2) were significantly different between the two samples. (M1 = 43.11, M2 = 54.34, t =50.80, p <0.05). Data revealed by the table above accept the existence of significant differences between the two samples. The null hypothesis is rejected. The effect size (d = 0.20) is small which means that there is an increased risk of committing type I statistical error (Vasiliu, 2018).

Table 2. T-test for two independent samples

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
S	Equal variances assumed	.039	.812	50.80	48	.000	11.23	.001	3.73	5.53
	Equal variances not assumed			50.80	29.07	.000	11.23	.001	3.73	5.53

2nd Hypothesis. Based on the results shown above, the research hypothesis that assumes significant differences of physiological parameters for a sample of 50 subjects (Tab. 3).

Table 3. Descriptive statistics for 2nd Hypothesis

Group Statistics

	COD	N	Mean	Std. Deviation	Std. Error Mean
PP	1.00	25	110.11	.001	.001

2.00	25	140.94	.001	.001

Results on the anxiety scale (Tab. 4) were significantly different between the two samples (M1 = 110.11, M2 = 140.94, t = 51.7, p <0.05). Data revealed by the table above accept the existence of significant differences between the two samples. The null hypothesis is rejected. The effect size (d = 0.21) is small which means that there is an increased risk of committing type I statistical error. (Vasiliu, 2018).

Table 4. T-test for two independent samples

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
P	Equal variances assumed	.058	.942	51.7	48	.000	30.83	.001	93.53	117.53
	Equal variances not assumed			51.7	29.07	.000	30.83	.001	93.53	117.53

5. CONCLUSION

By simulating and analyzing the psychological factors influencing law enforcement-driver interactions, this research seeks to enhance our understanding of these encounters and contribute to the development of evidence-based practices for law enforcement agencies and defensive driving education. Creating a safer and more respectful environment during traffic stops can lead to better outcomes for both law enforcement officers and drivers, improving public trust, drivers education and overall road safety. (Anderson, R., & Lee, C., 2018)

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SUBSTANCE AND ALCOHOL USE DISORDERS - SUBSTANCES, STATISTICS, AND CURRENT TREATMENT APPROACHES

ELIZA, NICOLAESCU[a], LAURA-MARIA, MATEI-MITACU[a]
[a] *"Eftimie Diamandescu" Psychiatric Hospital*

Abstract

Substance use disorders affect a significant proportion of the population and impose major economic burdens on governments. They have multiple dimensions, ranging from economic costs to significant disruptions in the personal lives of consumers. Issues such as the motivation behind consumption, the nature of substances consumed, and the importance given to their physiological effects are raised. The holistic approach to substance use is the focus of most current theoretical models: observing the individual and all their characteristics in their environment, utilizing their resources to identify the causal chain of consumption propagation or addiction development. The success of addiction treatment relies not only on its nature but also on its integration into the individual's existence.

Keywords: *substance use, substance abuse, addiction, treatment*

1. INTRODUCTION

Substance use disorders currently exhibit a diversity unprecedented throughout the history of their proliferation. This diversity is evident both in terms of the substances consumed (with increasingly numerous options) and the severity of the disorder (recreational use, occasional use, emotionally motivated use, constant use, daily use).

Substance consumption has repercussions on numerous aspects of life and is driven by a wide range of motivations and attitudes. With the increasing accessibility of substances in most geographic areas and across various social categories, the phenomenon has been approached from various bio-psycho-socio-cultural perspectives to gain a comprehensive understanding of it.

Why is substance use increasingly prevalent? What is the reason it easily integrates into the behavior of diverse age groups and cultural models? Which substance is the most addictive? What is the distinction between consumption and addiction? How does the consumption of legal substances become problematic? What are the limits? These are just a few of the questions that explanatory systems of substance abuse consider. In the clinical assessment of substance use, the form

Corresponding author: Eliza Nicolaescu
E-mail address: penelopanicolaescu@yahoo.com

that produces the most pronounced impairment is addiction since it affects most functional domains and exceeds the voluntary control, even sustained, of the consumer.

Addiction

A recurring issue regarding dependencies is the balance between the substance consumed and the personal characteristics of the consumer. While it can be empirically argued that there are more alcohol dependents than green tea dependents, it can also be observed that certain individuals who consume a particular substance develop an addiction, while others do not.

From this objective state of affairs, two directions emerge:

I. Certain substances have a higher addictive potential due to their neuro-physio-psychological actions on the body: stimulation of opioid receptors in the brain, neuroplasticity of seeking gratification, etc. (Leshner, 1997; 2001). However, this fact alone cannot fully explain the development of substance dependence, considering that the physiological structure of the brain is similar in most individuals and utilizes the same range of neurotransmitters. If the theory of substance action on the brain were irrefutable, then all individuals who frequently drink would develop alcohol dependence, all individuals who use morphine for medicinal purposes would become dependent, and so on. However, this is not the case, even though these substances conventionally have an increased addictive potential (Levy, 2013).

II. Each person's individual structure predisposes them to the development of certain dependencies - addiction has a degree of genetic heritability, so offsprings of dependent individuals have a higher vulnerability to developing a dependence (Tsuang et al., 1998). Other predisposing factors that vary from person to person include temperament, socio-cultural conditions, and educational history (Mate, 2008).

Motivational Aspects

When addressing the issues of addiction and substance abuse, it is necessary to consider the motivations behind the actions and the benefits that consumption entails for the consumer. Studies from the early twenty-first century, a period in which substance use intensified, demonstrate the diversity of reasons why consumers initiate and perpetuate this behavior. These motives extend beyond the sensory dimension commonly invoked in discussions about substance use (the fact that a particular drug induces a certain state). Beyond the state induced by a substance, there is a need that drives the person consuming it- a need that often contains a significant psychological dimension.

A recent perspective introduces the issue of attachment among the factors of interest in the study of substance abuse. This approach has gained prominence in the present century, arising from the need to explore the implications of addictions that transcend the sensory realm and thus go beyond the substance-stimulus-response relationship of the stimulated organism. The relationship between substance use and attachment is a promising perspective, particularly in cases where it involves the use of substances to restore or maintain a state of emotional attenuation, detachment, recovery from trauma, response to stress, and other profound dimensions of an individual's intra-psychic life.

Emotional factors are responsible for a wide range of psychobehavioral responses in individuals, from attitudes and interests to actions and somatizations.

The way human beings interact with others and their living environment carries an emotional charge, the magnitude of which varies depending on the nature and valence of the relationship. In any relationship, attachment can be discussed as a structure that develops in accordance with the exchange of information and emotional reactions between individuals (Bowlby, 1979). Authors Koob & Le Moal, 2007; Volkow & Li, 2004) have observed patterns of attachment between addicts and the drugs they prefer. Thus, although the object of addiction is actively desired and sought after by the consumer, the latter gradually gains perception of the major cost that consumption has on their life, leading to cognitive dissonance and affective ambivalence. Paradoxically, the dependent person realizes how much harm the substance causes them, yet continues to seek it. The moment when the person realizes this contradiction coincides with gaining insight into the illness.

Fletcher et al. (2015, p. 111) present the drug users' need to seek secure attachment in their relationship with the substance. They describe the experience of attachment in interpersonal relationships as overwhelmingly demanding, while the substance "offers comfort and understanding without asking for anything in return." Paradoxically, the person feels safe and accepted while engaging in risky behaviors.

2. ADDICTIVE SUBSTANCES

I. Opioids

A popular and widespread category of drugs is opioids. These substances have a high degree of addictiveness and are preferred by certain categories of consumers based on their tranquilizing effects, as well as for financial reasons, as there are multiple affordable options available on the black market.

The human brain has specific opioid receptors that are naturally stimulated by organic opioid peptides (endogenous), such as endorphins (the most well-known), enkephalins, endomorphins, dynorphins, and others. These receptors belong to a category called G protein-coupled receptors (GPCRs) and react to both endogenous agonists mentioned earlier and exogenous stimulations such as opioid substances (heroin, morphine, fentanyl) (Dhaliwal & Gupta, M., 2019). The reaction caused in the body by both organic and synthetic substances is one of analgesia and tension relief, but the magnitude of the effects is clearly greater in the case of exogenous substances, which, over time, destabilizes the activity of opioid receptors, leading to the development of tolerance. Tolerance requires an increase in the quantity of the substance to achieve the same psychophysiological effect, while the pain threshold decreases as the functioning of brain receptors is altered. As a result, seeking the substance is no longer associated with accessing a positive, euphoric state but with tempering the amplified painful experiences that come with chronic consumption, between doses. (DuPen, Shen & Ersek, 2007).

The psychobehavioral changes experienced by chronic users are significant: increased behavioral impulsivity and emotional lability have a major prevalence among addicts. From a physiological standpoint, many of these changes can be attributed to the dynamics of brain dopamine, and from a psychological one, they are related to the focus of affective-volitional-motivational dynamics on the substance: projection, procurement, possession, consumption.

Opioid substance addiction poses a high health risk because the consumption behavior or the physiological pathologies resulting from opioid substance use (HIV,

AIDS, hepatitis, emaciation, malnutrition, etc.) can become life- threatening (Seth et al., 2018). Thereupon, opioid users fall into a category of patients with increased vulnerability and require targeted, multidisciplinary therapeutic intervention and long-term maintenance treatment.

II. Stimulants

Stimulant drugs, also known as psychostimulants, are sympathomimetic psychoactive substances that increase the activity of the central nervous system, enhancing energy levels, activity, and exertion capacity. Their action differs significantly from opioids, with the latter having a tranquilizing effect, while stimulant substances increase sensitivity, raise the pace of activity, movement frequency and physical resistance.

The action of psychostimulants on the central nervous system is related to dopaminergic circuits (Volkow et al., 1999), the dynamics of excitatory and inhibitory neuronal impulses. The sympathomimetic action of stimulants is connected to the reflexes of the sympathetic autonomic nervous system; its activation puts the body in a "fight or flight" state: salivary and enzymatic secretion decrease, vigilance and muscular tone increase, and in the case of high doses, hyper-vigilance, hyperactivity, and hyperventilation may occur.

In moderate amounts, stimulants produce euphoria, increased self-confidence and subjective well-being, elevated blood pressure, heightened alertness, decreased appetite, and excessive talking. In large quantities or cases of overdose, stimulants can cause anxiety, panic, tension, hyperthermia, tonic-clonic seizures, coma or death (Gonçalves, Baptista & Silva, 2014).

This category includes amphetamines, caffeine, nicotine, ephedrine, cocaine, methylphenidate, and others.

Some stimulants are encountered in everyday life, such as caffeine and nicotine, while others serve medical purposes as pharmacological treatments for disorders like ADHD or narcolepsy (methylphenidate, amphetamines, or nootropic substances like modafinil).

Cocaine is a synthetic central nervous system stimulant and a high-risk drug with increased addictiveness.

III. Alcohol

Alcohol is a psychotropic substance, which means it depresses the central nervous system. Its action in the brain is significantly linked to the limbic system, particularly to the function of the amygdala in triggering the fear response following the evaluation of a stimulus as dangerous. Other brain areas affected by alcohol include the hippocampus (involved in memory encoding and storage) and the cerebellum (responsible for orthostatic balance and movement), as well as areas in the frontal lobe (social censorship, impulse control). Special receptors for ethanol have not been identified in the central nervous system, but its action on opioid receptors and dopaminergic and noradrenergic circuits is well-known. For this reason, in the treatment of alcoholism, partial agonists or antagonists of certain opioid receptors are often used.

Due to its extensive action in cortical and subcortical areas, psychosomatic reactions to alcohol consumption vary from one consumer to another, and the preference for alcohol encompasses multiple temperamental and motivational patterns.

For this reason, alcohol consumption poses a social problem that is slow to decrease in magnitude, and furthermore, it is present in all social categories and in the majority of cultures. Alcohol is much more accessible than other psychoactive substances, as its sale and acquisition are only regulated by state monopolies and the prohibition of sales to minors. Thus, the largest category of the population has access to alcohol, and it is easy to procure.

The prevalence of alcohol contributes, on the one hand, to the chronicization of consumption for certain consumers, and on the other hand, to the decrease in the magnitude of consumption. A socially acceptable behavior such as alcohol consumption can become a psychosocial problem when a) its frequency exceeds the population average, b) it slows down, hinders, or disrupts daily activities, c) it cannot be easily stopped despite the consumer's attempts, and d) it deteriorates physical or mental health.

The line between normal alcohol consumption and abusive alcohol consumption is difficult to evaluate, both from the perspective of social perception (society is more tolerant of alcohol consumption due to its legality dating back centuries and apparent regulation) and from the perspective of the consumer themselves, who naturally tends to be lenient towards their consumption behavior, rationalize or diminish its importance, even though it is heading towards maladaptive behavior. It can be observed that the perception of one's own consumption behavior is organized based on the macro-social understanding of consumption, as will be shown in the following section.

3. STATISTICS

Globally, alcohol, tobacco, and drug abuse represent a significant risk factor to the health and lives of populations, according to the World Health Organization. Romania falls into the category of countries where there is currently a stagnation in the rate of drug proliferation and a slight decrease in alcohol consumption per capita.

I. ILLEGAL SUBSTANCES

The report from the National Anti-Drug Agency for the years 2021-2022 confirms that the most vulnerable period for the onset of substance use is adolescence, and the largest population of consumers falls between the ages of 15 and 34. The conclusions drawn by Marshall (2014) regarding drug use in adolescence indicate a global disruptive phenomenon facilitated by drug use, through comorbidity with other risky behaviors such as disorganized sexual life, alcohol consumption, and delinquency.

In the present decade, global drug use among individuals aged 15 to 64 has ranged between 270 and 290 million consumers. In 2020, there was a 26% increase in the prevalence of annual drug use compared to the previous period of 2010.

In 2022, approximately 5.5% of the population aged 15 to 64 consumed psychoactive substances, and around 14% of them struggled with a substance use disorder (harmful use or dependence) (WHO, 2022).

The situation in Romania aligns with the global trends, according to the annual report of the National Anti-Drug Agency, covering the same age range (15-64). In 2022, 6% of the population reported illicit substance use. A representative phenomenon for Romanian society, however, is the slowing down of the spread of

psychoactive substance consumption compared to previous years (the population of consumers is growing, but at a slower pace), with the exception of the increased use of new psychoactive substances.

The substances with the highest consumption rates in Romania are cannabinoids and new psychoactive substances, and the most affected region in terms of drug use is the Bucharest/Ilfov area. In 2022, a total of 5,037 people sought assistance and treatment for substance-related disorders, primarily for cannabis, opioids, and new psychoactive substances.

The earliest age of onset for psychoactive substance use is 13 years old.

II. ALCOHOL

Ethanol, which is far more readily available than other psychoactive substances, has a distinct impact on the central nervous system. This is why harmful alcohol consumption is more widespread and often more socially tolerated.

In Europe, alcohol consumption varies in terms of frequency and quantity. In Southern and Western Europe, consumption frequency is higher (daily or nearly daily), but the quantity consumed is lower. Additionally, public displays of drunkenness are rare, and social tolerance towards intoxicated individuals is low. In Northern and Western Europe, the consumption pattern is characterized by episodes of excessive drinking (intoxication, drunkenness) interspersed with periods of abstinence. In these areas, social tolerance towards individuals in a state of drunkenness is higher.

Alcohol consumption affected 58 million Europeans in 2019 (abuse, harmful or excessive consumption), out of which 28 million were alcohol-dependent (with a preference towards the male population), many of whom were not under treatment.

In Romania, a decrease of approximately 35% in per capita alcohol consumption was observed in 2020 compared to 2010. However, this does not imply a decrease in the number of heavy alcohol consumers in our country. Among the Romanian population of alcohol consumers, 67% of men and 31% of women have abusive consumption. Currently, 2% of the male population and 0.6% of the female population suffer from alcohol dependence. A small proportion of them seek help, and an even smaller percentage succeeds.

4. CURRENT DIRECTIONS - FIRST-LINE TREATMENT

In the treatment of individuals dealing with alcohol-related disorders, the objectives can be categorized into three groups: cessation of consumption, maintenance of abstinence, and reduction of consumption.

Facilitating the cessation of consumption, or the detoxification stage, occurs immediately after an episode of abuse. One of the most important aspects of this stage is managing withdrawal symptoms. The first-line treatment for detoxification is benzodiazepine medication (recommended for 1 to 4 weeks, depending on the severity of withdrawal symptoms). The treatment regimen is supplemented with thiamine (vitamin B1) administration.

For maintaining abstinence, naltrexone and acamprosate are used. These substances reduce the psychophysiological craving for alcohol. In certain cases, they serve as adjuncts during the transitional phase from medication control of alcohol cravings.

Reducing consumption is a more desirable option for some consumers, and nalmefene is administered as a first-line treatment. Baclofen is also recommended for reducing cravings, especially for patients with low motivation to quit alcohol.

Aversive therapy is another option in the treatment of alcoholic patients, with the active substance being disulfiram. It causes physical discomfort upon the ingestion of ethanol, including nausea, vomiting, dizziness, and headaches. Aversive therapy should be used with caution.

In the treatment of drug use, deep brain stimulation has been identified as a viable option (Wang et al., 2018). This treatment targets substance-seeking behavior, particularly the need for consumption, by stimulating the nucleus accumbens in the mesolimbic circuit. The neurocircuits in these areas activate visceral cravings and are much more stable and robust than the pleasure circuits based on the nucleus accumbens. Therefore, addictive behaviors are driven not so much by the pleasure offered by the substance but by the visceral craving, which transforms into a powerful and elaborate motivational structure with implications for both consumption behavior (Koob, 1998; XU, Nan, Lan, 2020) and negative emotional states such as depression (Schall, Wright & Dong, 2021).

Neurostimulation of neural circuits in the mesolimbic pathway as a first-line treatment reduces consumption behavior by decreasing maladaptive cognitive orientation (dominant and obsessive ideas structured around obtaining the substance) and, consequently, behavior (volitional acts exclusively or nearly exclusively directed towards obtaining the substance). Other brain regions where deep neurostimulation has shown efficacy in animal models include the insula, hypothalamus, lateral habenula, and subthalamic nucleus (Wang et al., 2018).

The pharmacological treatment options chosen in clinical contexts include substances such as buprenorphine, methadone, particularly for opioid dependence. For patients who develop treatment resistance or experience relapses under buprenorphine or methadone treatment, levacetylmethadol (levomethadyl acetate) is also used. The pharmacological protocol for substance dependence consists of partial agonists of opioid receptors following the analgesic pattern (Lloyd et al., 2017; Yiannakopoulou, 2015) so that the withdrawal period and patient desensitization can occur under conditions of relative comfort and safety.

Predictors of success in substance abuse treatment include resilience and the remarkable ability of the body to recover after significant and repeated intrusions and alterations (Appendix II), as well as compliance with the recommended treatment.

5. DIRECTIONS IN ADDICTION TREATMENT (SECONDARY LINE)

Psychoeducation is a form of psychotherapeutic intervention that addresses addiction as a treatable pathology and recognizes the person in their full complexity, not as a drug addict, alcoholic, or depraved individual.

Psychoeducation involves describing the causal chains within addiction as a psychobehavioral structure: what substance use means, when it becomes problematic, under what conditions abuse can be discussed, and what addiction entails (Kaminer, Burleson, & Goldberger, 2002).

Motivational interviewing (Murphy, 2004) is a technique that has proven effective in the treatment of alcohol dependence in the past two decades. It involves

recalibrating the patient's sources of motivation, restructuring their value system, and raising awareness of their own resources and limitations.

Work therapy, or occupational therapy (Guttman, 2006), is used in psychotherapeutic practice to redirect the attention of dependent individuals and provide them with opportunities to regain functionality. Through this technique, patients struggling with addiction can engage in activities and projects that help them regain self-esteem and a sense of personal worth. Such actions can evolve into controlled, remunerated productivity, allowing the person to reintegrate into the workforce.

These techniques serve as adjunctive treatments and have variable success rates, heavily dependent on the environment in which the person spends most of their time, the goals they can set for themselves, and, not least, the people around them and their attitudes.

CONCLUSION

Substance use, whether within or outside legal limits, constitutes a significant social problem that grows annually at a speed influenced by various macrosocial and personal factors. The maladaptive phenomena arising from this behavior are abuse and addiction.

Individuals facing such problems significantly benefit from multidisciplinary treatments. When they choose to change their consumption behavior, they become active and conscious agents of their recovery and should be entrusted with confidence and supported throughout this process.

Through unconditional support and empathy, the recovery process is freed from guilt and can unfold its stages in a secure manner, allowing individuals to form alternative sources of fulfillment beyond the sensation produced by the object of their dependence. They can expand their interests and regain control over their own lives.

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APPENDIX I

Operational Terms

USE (of substances) - consumption of substances of various magnitudes

ABUSE - excessive consumption of substances

INTOXICATION - significantly altered state of consciousness following substance use

INEBRIATION - altered state of consciousness following alcohol consumption

ADDICTION/DEPENDENCE - inability to consciously exercise volitional control over a behavior (in this case, consumption behavior), with implications in most areas of life: educational-professional, social-family, psychological, and/or psychosomatic.

ALCOHOLISM/ALCOHOL USE DISORDER - chronic, maladaptive use of alcohol; alcohol dependence.

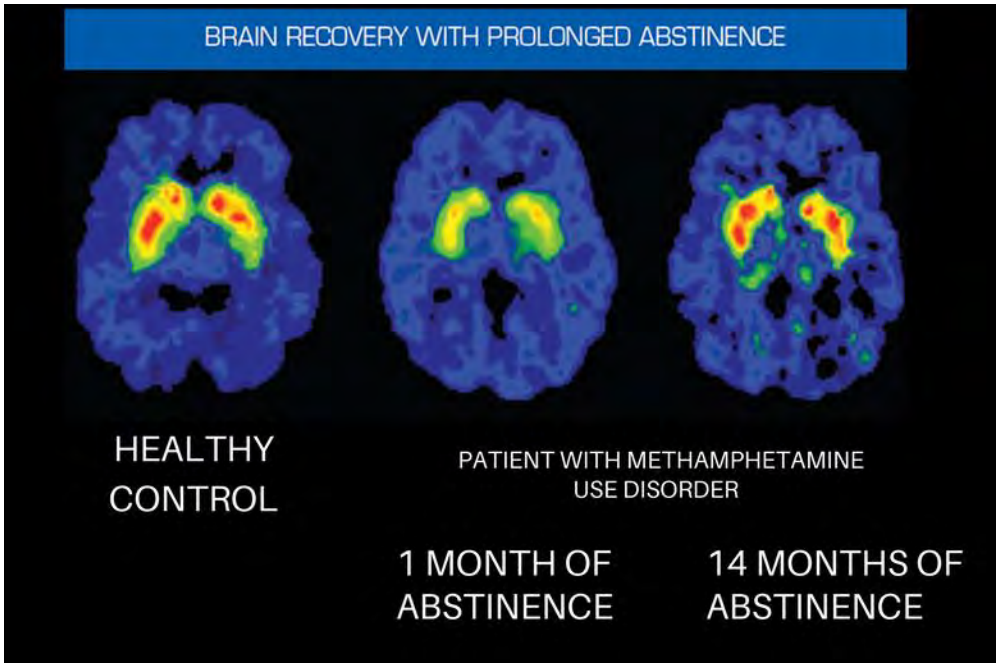
CRAVING - visceral desire, a strong urge that polarizes the person's affect, volitional power, and actions toward obtaining and consuming the substance/engaging in addictive behavior.

WITHDRAWAL - the elimination of the substance from the blood and tissues, resulting in somatic (physical discomfort) and/or psychological symptoms (perceptual, cognitive, behavioral disturbances).

TOLERANCE - develops when the same amount of substance no longer produces the same effect in the body, requiring an increased dosage.

OVERDOSE - the administration of a quantity of substance larger than the body can process, resulting in significantly disrupted or abolished vital functions (death).

APPENDIX II



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EXPLORING THE ASSOCIATION BETWEEN SUBMISSIVE BEHAVIOUR, SOCIAL COMPARISON AND DEPRESSION IN A CLINICAL AND NON-CLINICAL SAMPLE

ALEXANDRA BANCIU[a]
[a] *Lucian Blaga University of Sibiu, Faculty of Social Sciences and Humanities Department of Psychology*

Abstract

According to Social Rank Theory, social comparison and submissive behaviour may be adaptive în species that compete for resources as a mechanism to switch off behaviours when loss is imminent (thus saving an organism for injury). In humans, depressive disorder is thought to occur when social comparison and submissive behaviour becomes prolonged. The aim of the present research is to explore the relations between social comparison, submissive behaviour and depression. Method: the participants were a group of patients with depression diagnosis (n = 50) and a group of healthy controls (n = 86). Results showed that association between social comparison and depressive symptoms is statistically significant in both samples, and the association between submissive behaviour and depression is statistically significant only for the non-psychiatric sample. These findings bring new evidence about the role of social rank dimensions in psychopathology, especially in depression. Future studies should enlarge the sample size and test possible relationships with some other variables and the moderators involved.

Keywords: social rank, depression, social comparison, submissive behaviour

1. INTRODUCTION

According to the World Health Organization (2023), approximately 5% of adults worldwide experience depression and this figure is likely to be even higher as not everyone with depression receives an official diagnosis.

The theoretical and empirical approach to depression has historically been dominated by identifying symptomatology and treatment, while questions regarding the etiology of depression have largely focused on immediate precipitating factors relevant to the individual. While these proximal causes are undoubtedly important for understanding depressive phenomena, an increasing number of researchers are now directing their attention towards an approach based on evolutionary or functional theories.

Corresponding author: Alexandra Banciu
E-mail address: banciu_alexandra89@yahoo.com

The motivation behind using an evolutionary model in this study, and why theories within this paradigm hold significant practical and theoretical importance, is related to the understanding of the role of depressive phenomena in an evolutionary context. It provides insight into the reasons why individuals experience depression.

The Social Rank Theory (SRT)

The Social Rank Theory (SRT) is one of the most robust theories within the field of evolutionary psychology. SRT is aiming to explain the relationship between social rank and mental health. Unlike other evolutionary theories, SRT specifically addresses the feelings of inferiority and submissiveness commonly associated with depression.

According to SRT, low mood and submissive behaviour are involuntary responses that occur when individuals encounter competitive situations where they are defeated by others, such as in competitions for resources like food or mates, against dominant individuals. These responses serve as a means to inhibit aggressive reactions, communicate a non-threatening status, and facilitate acceptance of the situation. The symptoms of depression, such as submissiveness, withdrawal, and self-criticism, reflect this adaptive response (Price et al., 1994; Gilbert, 2001). Depression has thus been naturally selected to facilitate acceptance of a subordinate role, and its purpose is to prevent further defeats for the individual who has experienced loss (Gilbert & Allan, 1994).

Social rank is defined by two dimensions: the cognitive dimension characterised by social comparison (perception of one's own superiority or inferiority) and the behavioural dimension characterised by submissive behaviour (inhibition in conflictual or competitive situations) (Gilbert & Allan, 1994).

According to Siddaway et al. (2015) meta-analysis, the social rank concepts of defeat and entrapment consistently showed associations with depressive symptoms in both clinical and non-clinical samples. Social rank tested as a predictor of depressive symptoms over time (Sturman & Mongrain, 2008; Feinstein et al., 2013; Dolbier et al., 2013; McGovern & Nazroo, 2015).

Submissive behaviour

The tendency to act in a submissive manner can be viewed from an evolutionary perspective, so while dominance hierarchies are often talked about, it might be more accurate to discuss hierarchies of subordination. This is because not only aggression determines a hierarchy, but also submissive behaviours that result and how prepared the subordinate is to submit to such a hierarchy.

Submissive behaviour is generally related to perceiving a lower social status and functions as a calming strategy that may involve suppressing hostile feelings, lack of assertiveness, denying personal needs, and desires to please others, thus avoiding threats posed by others. Submissiveness can be signalled in various ways, such as avoiding eye contact, not initiating conversations, refraining from expressing anger, or not defending oneself against criticisms from others (Gilbert & Allan, 1994).

The authors describe two types of submissiveness, one involuntary and the other voluntary. According to the theory of social rank, involuntary submissiveness may be adaptive for species competing for resources as a mechanism to reverse aggressive behaviours when loss is imminent.

Studies like the one conducted by Allan & Gilbert (1997) describe how individuals with depression tend to exhibit submissive behaviour. For example, disregarding one's own worth or having a negative self-perception in social comparisons can lead to a fear of potential negative evaluation, which, in turn, prompts the adoption of submissive behaviour (Gilbert, 2000; Cheung et al., 2004). A prolonged period of submissiveness is linked to the development of depression (Allan & Gilbert, 1997; Gilbert & Allan, 1998; Gilbert, 2000; Cheung et al., 2004; Sturman, 2011).

Social comparison

There is a body of empirical evidence suggesting that the tendency to unfavourably compare oneself with others, perceiving oneself as inferior in various aspects, is associated with several psychological difficulties, including depression, social anxiety, stress, envy, and jealousy, low self-esteem, assertive and submissive behaviour, and neuroticism (Gilbert & Allan, 1995).

The strong tendency of individuals with depression to engage in unfavourable comparisons that accentuate their own inferiority often has negative consequences. According to the World Health Organization, the suicide risk in boys, particularly recorded in seven countries, has been associated not only with depressive mood and frequent use of social comparison but also with experiencing both simultaneously when the comparison was negative in nature (Dafinoiu and Boncu, 2014).

The present study seeks to identify the relationship between submissive behaviour, social comparison and depression in a clinical and non-clinical adult sample.

2. OBJECTIVE AND HYPOTHESES

2.2 OBJECTIVE

The research aim is to explore the relationship between depression, submissive behaviour, and social comparison in a clinical and a non-clinical sample of adults.

The objectives of the research:

1. To investigate the relationship between social comparison and depression in a clinical and a non-clinical sample of adults.
2. To investigate the relationship between submissive behaviour and depression in a clinical and a non-clinical sample of adults.

2.3 HYPOTHESES

The research hypotheses are as follows:

1. There is a relationship between social comparison and depression in clinical sample.
2. There is a relationship between social comparison and depression in non-clinical sample.
3. There is a relationship between submissive behaviour and depression in clinical sample.
4. There is a relationship between submissive behaviour and depression in non-clinical sample.

3. METHOD

Participants

The research was conducted on two samples, with a total of 136 subjects: a clinical sample (n=50) consisting of individuals with depression and a non-clinical sample (n=86). The non-clinical sample includes 86 participants, of which 51 are female (59%) and 35 are male (41%), and the clinical sample consists of 50 participants (40 females, 10 males) with diagnosis of depression.

Instruments

Social Comparison Scale (Allan and Gilbert, 1995). This scale measures self-perception of social rank and relative social position. The answers, scored on a scale from 1 to 10, are actually global assessments of people in relation to others. Low scores indicate feelings of inferiority and a general self-perception of low rank. The scale was translated to Romanian and the validity in the present sample was tested, demonstrating good reliability, with Cronbach Alpha being significant in the case of clinical (α=.77), and non-clinical samples (α=.82).

Submissive Behaviour Scale (Allan and Gilbert, 1994). It consists of 16 items that measure various aspects of submissive behaviour. The responses to the items are on a five-point Likert scale, where 0 means never, and 4 - always. The scale was translated to Romanian and the validity in the present sample was tested, demonstrating good reliability, with Cronbach Alpha being significant in the case of clinical (α=.78) and non-clinical samples (α=.86).

The Beck Depression Inventory - Second Edition (BDI II). It is an assessment tool for evaluating the severity of depression in adults and adolescents aged 13 and older, based on DSM diagnostic criteria. It consists of 21 items, with each item representing a statement that is rated on a scale from 0 to 4, where 0 means absent and 4 - very severe.

Procedure

The instruments were administered on paper format following the ethical code and GDPR guidelines, ensuring informed consent from all participants. All participants received detailed information about the study and willingly agreed to participate, fully understanding that their identities would remain anonymous.

4. RESULTS

This chapter includes the presentation and analysis of the obtained data, as well as the interpretation of the results in relation to the existing literature in the field.

Descriptive statistics

The descriptive analysis of the mean and standard deviations for the scores obtained by the two samples, the clinical and non-clinical, on the Social Comparison Scale, Submissive Behavior Scale, and Beck Depression Inventory, is presented below.

The mean scores on the Beck Depression Inventory (BDI II) for the non-clinical sample are approximately 4, indicating a very low level of depression. The mean scores on the Social Comparison Scale are 81.57 (out of a maximum score of 110), suggesting that a considerable number of participants compare themselves favourably to others. Moreover, the mean scores on the Submissive Behavior Scale are 19 (out of a maximum possible score of 64), indicating a low level of submissive behaviour.

Regarding the participants included in the clinical group, the scores on the Beck Depression Inventory indicate moderate depression (M=25.24). The scores on the Social Comparison Scale have a mean of 62.6, suggesting that individuals neither consider themselves better nor worse than others, but it is evident that they tend to compare themselves more unfavourably compared to the non-clinical group. The mean scores on the Submissive Behavior Scale indicate a moderate level of submissive behaviour.

Differences are also observed between the scores on the subscales of the Social Comparison Scale. The clinical group tends to compare themselves more unfavourably than the non-clinical group, especially regarding aspects related to social rank, attractiveness, and group belonging.

Association between social comparison and depression

Regarding the relationship between social comparison and depression, we found a statistically significant negative correlation in both samples, stronger in the clinical sample ($r=-.489$, $p<.01$) compared to the non-clinical sample ($r=-.264$, $p<.05$).

These results add to the evidence suggesting that social comparison correlates negatively with depression. Similarly, negative correlations were identified by Allan & Gilbert (1995) in both the clinical and non-clinical samples.

We obtained a statistically significant negative correlation between the social comparison subscales and depression for the clinical sample, with the correlation between depression and social rank being $r=-.346$, $p<.05$, between depression and group membership $r=-.409$, $p<.01$, and the highest correlation being between depression and attractiveness ($r=-.521$). The recorded results fall more into the moderate category, meaning that individuals do not consider themselves to have the highest social rank, but neither the lowest. They also do not feel marginalised or different, but they don't perceive themselves as very similar or accepted either. Regarding attractiveness, individuals with depression tend to rate themselves as

having moderate attractiveness compared to others, but this aspect seems to be the most stringent in terms of correlation.

According to the results, for the non-clinical sample, we did not obtain a statistically significant relationship with the subscales of social rank, attractiveness, and group membership. These results differ from those obtained by Allan & Gilbert (1995), who identified correlations between subscales for both the clinical and non-clinical samples.

Our results are in line with the majority of research in the field, which shows a negative correlation between depression and social comparison. This negative correlation is also typically associated with psychological vulnerability, interpersonal sensitivity, hostility, shame, social anxiety, eating disorders, anhedonia, hopelessness, envy, jealousy, low self-esteem, and neuroticism (Allan & Gilbert, 2000; Gilbert 2002; Troop et al., 2003; Carvalho et al., 2013; etc.).

Association between submissive behaviour and depression

According to the results obtained in this study, submissive behaviour correlates positively with depression. We found significant correlation only for the non-clinical sample, where the correlation is of moderate intensity and statistically significant ($r=.443$, $p=.01$).

However, in the clinical sample, although there is a relationship between depression and submissive behaviour, it is not statistically significant.

Our results are similar to other studies that aimed to identify the relationship between submissive behaviour and depression. Studies such as those conducted by Allan and Gilbert (1997), Gilbert (2000), O'Connor et al. (2002), Sturman (2011), etc., have also identified a significant correlation between depression and submissive behaviour.

The results obtained in this study should be treated as exploratory, and conducting further research on this topic is capable of providing new evidence to either strengthen or refute these findings.

5. CONCLUSIONS

The evolutionary approach in psychopathology aims to identify adaptive strategies and their biological mediators that have become maladaptive and psychopathological, for example social anxiety and depression can be adaptive in the sense of helping the individual avoid some of the social norm violations (Gilbert & McGuire, 1998) or disengaging from competitions or unattainable goals (Klinger, 1975, cited in Gilbert, 2000). Anxiety and depression become maladaptive when they lead to vicious circles of increasing social avoidance, unfavourable social comparison or/and defensive submissive behaviours.

Regarding our aim of exploring the relationship between social comparison, submissive behaviour and depression, the results are consistent with the existing literature.

The results obtained in this study indicate that individuals included in the clinical sample report higher levels of unfavourable social comparison and more pronounced submissive behaviour compared to the non-clinical sample. This

tendency of devaluation and exclusion has been observed in numerous studies (Allan & Gilbert, 1995; Gilbert, 2000, Antony, Rowa & Liss, 2005; Troop & Baker, 2008) which included groups of individuals with depression, social phobia, eating disorders, etc.

We found a statistically significant negative correlation between social comparison and depression for both samples, with a stronger correlation observed in the clinical sample. These findings support the results obtained by other researchers (Allan & Gilbert, 1995; Gilbert, 2000; Sturman, 2011) who describe the tendency of individuals with depression to engage in unfavourable comparisons that accentuate their own feelings of inferiority and lead to distancing from others and underestimating their attractiveness.

Additionally, we found a positive correlation between submissive behaviour and depression, but this was only significant in the non-clinical sample, where the correlation was of moderate strength.

Wetherall, Robbb, O'Connor (2019) systematic review showed that perceiving oneself as having a lower rank compared to others is strongly associated with higher depressive symptoms, particularly in univariate analysis, also it has stated that the perceived low rank is connected to suicidal ideation and self-harm.

Depression can bring about numerous negative aspects and profound suffering that is difficult to comprehend for those who have not experienced it firsthand. It is challenging to imagine that depression could offer any advantage to an individual. However, similar to other physiological functions that cause discomfort, withdrawal and inhibition behaviour may serve a functional purpose.

Limitations and suggestions

One of the limitations of this research is the small number of participants, especially in the clinical sample. Furthermore, we did not test potential moderators. Therefore, some of the future research directions will be to replicate the study in a more representative sample and to test some of the potential moderators.

The results obtained in this study should be treated as exploratory, and further research on this topic is necessary to provide additional evidence and strengthen the presented results.

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THE AROMAS AND THE MIND

DIANA, DRAGOMIR[a]

[a] *Hyperion University, Faculty of Psychology and Educational Sciences*
Department of Psychology

Abstract

This paper aims to introduce the role that aromas (odors) could play in managing the psychological challenges and improving the mental health of human beings, given the direct link between our olfactory system and the brain, with a direct impact on cognitive-emotional states.

Mental disorders are often multi-symptomatic which irrecoverably bear on the individual's quality of life. Although there are conventional intervention protocols available, whereby psychology attempts to provide adequate symptom control, there certainly still are many unanswered questions here.

Over the past decades, the use of aromas as an adjuvant in clinical psychology proved to be effective in relieving symptoms, particularly in depression, anxiety, distress, fatigue, insomnia, but also in improving memory and attention.

More and more research studies conclude that the use of aromas in psychological practice could be a key element in improving symptom control of various mental disorders and life quality.

Keywords: *aromas, mind, mental disorder*

Motto:

"There is virtually no people, known to anthropology – however remote, isolated or primitive – in which some form of doctoring with plants was not practiced." (Griggs, 1997)

"History showed us that plants and essential oils had been used for thousand of years to promote health and wellbeing.
Aromatic treatment (Psycho-aromatherapy) is a continuation of this tradition of old, providing us a natural and effective method to enhance our state of mind and to treat our emotional and mental troubles." (Tisserand, 2004).

*Applied to the skin these essences regulate the activity of the capillaries and restore vitality to the tissues... "...**But of the greatest interest is the effect of fragrance on the psychic and mental state of the individual.***
Powers of perception become clearer and more acute... The use of odiferous matter induces a true sentimental and mental liberation ...essential oils liberate us of

Corresponding author: Dragomir Diana
E-mail address: ms.diana.dragomir@gmail.com

that emotion which perturbs us, but leave unaltered the other faculties." (Maury, 1961).

A report published by the World Health Organization (WHO, 2022), in June 8th, 2022, shows that, *"In 2019, 1 in every 8 people, or 970 million people around the world were living with a mental disorder, with anxiety and depressive disorders the most common (1). In 2020, the number of people living with anxiety and depressive disorders rose significantly because of the COVID-19 pandemic. Initial estimates show a 26% and 28% increase respectively for anxiety and major depressive disorders in just one year."*

Another report published by the World Health Organization (WHO, 2023), in June 23rd, 2023, points out that approximately 280 million people in the world have depression and more than 700,000 people die due to suicide every year, suicide being the fourth leading cause of death in 15–29-year-olds.

These are just two of the many reports that draw attention to the process of degradation of the mental health of the world's population and prompt us to put mental health at the forefront of our efforts, both at the level of public health and at that of personal health. Finding simple and effective ways to manage emotional and psychological wellbeing becomes a pressing task for each of us.

Plant aromas have always been used to alter mood (especially in the form of perfumes), the direct link between our olfactory system and the brain being scientifically attested long ago and fully proven in recent years through complex clinical studies. A mere search on the *PubMed* platform (specialized in medical and biomedical sciences), attests to a number of over 12,300 research studies on the effects of essential oils on human beings, only in the latest 5 years (PubMed, 2023).

One of the questions to which science is still searching for simple and certain answers is whether one could capitalize on the power of olfactory stimulation to cope with emotions and manage the mental challenges of the times we live in. And if so, to what extent? How much can the aromas of essential oils extracted from plants help us cope with various psychological challenges, manage our emotions, or improve our mental health?

It is a known fact that aromas are perceived via olfactory receptors in the nose, which detect aromatic molecules and convert them into electrical signals, which are further transmitted to the brain via the olfactory nerve, where they are processed in various regions of the brain, including the olfactory bulb and olfactory cortex.

While olfactory signals are processed at the level of the olfactory cortex, our brain identifies chemicals in flavors and associates them with certain experiences or memories. Nevertheless, aromas can also cause physiological reactions, such as salivation or insulin secretion. These reactions are triggered by the neurotransmitters and the hormones that are released in the brain following processing of olfactory signals. Thus, the scents of essential oils can influence the level of *serotonin, dopamine, endorphins, oxytocin*, *etc.* through the intermediary of the effects generated on the central nervous system.

This finding cleared the way for an impressive number of clinical studies analyzing the effect of essential oils aromas on human mind, and modern research on the psychotherapeutic effects of essential oils began in 1923, with smell-test experiments conducted by Italian physicians Giovanni Gatti and Renato Cayola,

whose results were published in an article titled "*The Action of Essences on the Nervous System"* (Damian & Damian, 1995).

According to their research, applying certain essential oils extracted from certain plants can have sedative or stimulating effects, and can relieve anxiety and depression. Nonetheless, the identification of these psychotherapeutic, sedative or stimulating effects was not performed by the respective physicians by treating and monitoring people diagnosed with anxiety or depression, but by measuring pulse, cardiovascular and respiratory activity, before and after inhaling each essential oil aroma. The list of sedative essential oils recommended by the two physicians for anxiety relief includes neroli essential oil (which is obtained from orange blossoms), petitgrain essential oil (which is obtained from orange leaves), cedarwood essential oil, chamomile, melissa and valerian. The only antidepressant recommended was ylang-ylang essential oil (which they also cited, without providing an explanation, as an aphrodisiac).

In the 1970s, Paolo Rovesti (Rovesti, 1980), another Italian researcher, continued the investigations into the psychotherapeutic effects of aromas, which were begun by Giovanni Gatti and Renato Cayola, this time on real patients, diagnosed with depression and anxiety disorders. Unlike his predecessors, Paolo Rovesti indeed used aromatic therapy to treat the psychological conditions of his patients, inhalation being his administration method of choice and using essential oils in synergy, rather than as single scents. The studies conducted by Paolo Rovesti confirmed the conclusions of the research works performed by Giovanni Gatti and Renato Cayola on the antidepressant effects of ylang-ylang, to which he also added jasmine, orange[1] (Hongratanaworakit & Buchbauer, 2005), sandalwood, lemon[2] (Komiya, Takeuchi, & Harada, 2006) and lemongrass. As a matter of fact, numerous subsequent clinical studies confirmed the antidepressant effects of the ylang-ylang aroma[3] (Heuberger, Tapanee, & Buchbauer, 2006), as well as of the other essential

[1] In a small trial of twenty-four individuals (12 men, 12 women), the inhaled aroma of Sweet orange (Citrus sinensis) essential oil increased physiological arousal (sympathetic tone) and at the behavioral level, individuals who inhaled sweet orange rated themselves more alert then the control group. The researchers believe that this furnishes scientific proof that the inhalation of sweet orange may be of benefit for the relief of mild depression and stress in humans. The group was divided into two with one group inhaling sweet orange and the other group inhaling pure water vapor only.

[2] A combination of lemon, orange, and bergamot essential oils with cis-4-hexanol exhibits antidepressant and immune-enhancing activities. Twelve depressive patients experienced some relief from their depression after being treated with the citrus fragrance. Their hormone levels and immune function also improved during treatment.

[3] In a 2004 placebo controlled study, researchers set out to study the potential effects of inhalation of ylang ylang essential oil on the autonomic nervous system as well as the mental and emotional response, as well as to elucidate the potential mechanisms of action for these effects. Twenty-four health volunteers participated in the study. Two groups consisting of 12 individuals were formed. In the ylang ylang group, participants inhaled ylang ylang for 20 minutes. The individuals in the placebo group, inhaled a placebo substance for 20 minutes. Breathing rate, pulse rate, and skin temperature were taken in each session. A baseline session using placebo only for all individuals was performed prior to the ylang ylang session and placebo session. Each participant also shared their subjective mental and emotional response to what they experienced during their inhalation session. The study found that the inhalation of ylang ylang decreased pulse rate, decreased systolic blood pressure, and decreased physiological arousal (decrease of sympathetic tone). Interestingly, participants in the ylang ylang group rated themselves more alert and attentive. The researchers concluded that while ylang ylang decreases physiological arousal, subjectively it appears to make some individuals feel more alert and

oils mentioned, to which frankincense sage has been added over time[4] (Han, Hur, Buckle, Choi, & Lee, 2006).

Regarding the aromas with sedative effects, recommended in anxiety disorders, Paolo Rovesti confirmed the properties of petitgrain and neroli essential oils and added to the list the aromas of bergamot[5] (Rombolà, et al., 2017), lavender[6] (Sayorwan, et al., 2012), marjoram, cypress, rose, linden and violet leaves, his conclusions being confirmed by subsequent clinical studies, and so were other aromas of essential oils, like those of Roman chamomile[7] (Wilkinson, Aldridge, Salmon, Cain, & Wilson, 1999) and geranium[8] (Sabzghabaee, Shirdare, Ebadian, Aslani, & Ghannadi, 2011), (Fakari, Tabatabaeichehr, Kamali, Fakari, & Naseri, 2015).

For example, Prof. Dr. Ernst Wagner[9] and his team of specialists in pharmaceutical biology and biotechnology of the University of Munich, Germany,

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attentive. The researchers called this effect: harmonization. In their words "The effects of ylang ylang oil may be characterized by the concept of 'harmonization' rather than relaxation/sedation."

[4] A 2014 study published in Phytotherapy Research demonstrated that the inhalation of clary sage essential oil increased 5-HT plasma concentration significantly while plasma cortisol levels significantly decreased. The study included 22 menopausal women in their 50's. Two groups were formed: normal and depression tendency groups. Clary sage (Salvia sclarea) essential oil contained 63.58% linalyl acetate and 20.99% linalool. Other major components (< 3% each) included: b-caryophyllene, geraniol, nerol, geranyl acetate, neryl acetate, and a-terpineol. Both groups inhaled clary sage essential oil. 0.1 ml of clary sage essential oil was placed on a gauze and each participant would inhale through the nose for approximately 5 minutes. The researchers acknowledged that the study was small and that it lacked participants with severe depression, however, they believe the study supports the anti-depressant activity of clary sage essential oil and its potential value for individuals suffering with depression.

[5] A small pilot study using 57 individuals (50 women, 7 men), found that the diffusion of bergamot essential oil in a waiting room increased positive feelings and mood.

[6] Inhalation of lavender (scientific name not given) essential oil relieves anxiety and reduces cortisol levels in candidates for open-heart surgery.

[7] Massage with or without Roman chamomile (Chamaemelum nobile) essential oil reduces anxiety in cancer patients in a palliative care setting. Massage with Roman chamomile may increase quality of life. In a small study designed to test the effects of massage alone or aromatherapy massage using Roman chamomile essential oil on cancer patients in a palliative care setting. Eighty-seven patients completed the study. Each patient was allocated to one of two groups and received three full body massages over 3 consecutive weeks. The Roman chamomile group received massage with sweet almond oil and Roman chamomile oil (dilution not specified), the control group received massage with sweet almond oil only. Although both massage and massage with Roman chamomile proved effective at reducing anxiety and increasing relaxation. One significant difference that occurred post test: patients in the Roman chamomile group had significantly better quality of life, with greater improvement in their physical and psychological symptoms then patients in the almond oil only group.

[8] In a randomized clinical trial involving 100 women divided into two groups: 50 participants received two drops of 2% concentrated geranium essential oil to inhale and 50 participants received the equal amount as distilled water (placebo control group). The geranium oil was dropped onto similar odorless non-absorbent pieces of fabric attached to the participant's collar. Anxiety was reduced in both groups with a slightly higher reduction of anxiety with geranium.
Similar results with the upper ones were obtained from a randomized, triple-blind, placebo-controlled clinical trial involving 80 patients with acute myocardial infarction. Geranium essential oil inhalation reduced anxiety.

[9] Pharmaceutical Biotechnology - Faculty for Chemistry and Pharmacy - Prof DI Dr Ernst Wagner (uni-muenchen.de); Pharmaceutical Biotechnology - Faculty for Chemistry and Pharmacy - Publications Prof DI Dr Ernst Wagner (since 2000) (uni-muenchen.de)

centralizing the results of several research works, published a review of herbal flavors used as "*adaptogens",* which he defined as *"substances meant to put the body in a state of increased nonspecific resistance, so as to better cope with stress and to adapt to extraordinary challenges".* Thus, lavender oil, when taken in small amounts, proved to be a sedative, whereas in larger amounts, it becomes a stimulant.

The '90s came with an avalanche of research works and clinical trials that would analyze the specific psychological effects of essential oil aromas not only on human beings' emotional states, but also on the mental ones.

The Yale University researcher Frank Schab's paper (Schab, 1990), published in the July 1990 issue of the *Journal of Experimental Psychology: Learning, Memory and Cognition,* features the first firm scientific piece of evidence that aromas can help recall memories.

In his experiment, Frank Schab, who has since conducted psychological research at General Motors Research Laboratories in Warren, Michigan, demonstrated that students who were exposed to chocolate aroma while studying (doing a word exercise), and again during the next day's test, remembered their answers better than those who were not exposed to the chocolate aroma. Another experiment, with the same chocolate scent, involved 72 Yale University students who were asked to write an antonym for 40 common adjectives without being told they would have their memory tested on antonyms the following day. Some of the students were exposed to chocolate aroma during the antonym-finding exercise, and the others only during the memory (recall) examination test. The results of the study showed that students exposed to the chocolate aroma throughout the procedure (word match test and recall test) remembered a much higher percent of responses (21%) than the other participants, showing that the pleasant aroma inhaled during the studying process should be present. Dr. Frank Schab's research also reveals the fact that a student reading for different subject matters may also use a different flavor for each subject (Damian & Damian, 1995).

Moreover, clinical research has endorsed the use of aromas, especially pleasant ones, to create a positive reinforcement behavioral modification (for example, Dr. Susan Schiffman's behavioral techniques, considering that pleasant aromas are not rejected, either physically or emotionally, and therefore they penetrate deeper into the psyche and memory.

It has been proven, likewise, that the olfactory response to aromatic stimuli, be it an essential oil or another aroma, can be used more effectively when accompanied by physical therapy (e.g., massage), by a learning practice and/or by a cognitive intellectual exercise, applied, needless to say, by means of standard psychotherapeutic procedures and behavioral modification techniques, involving learning, conditioned reflex and partial reinforcement reflex.

In a study conducted also in the '90s by the University of Cincinnati, psychologists William Dember and Joel Warm found that subjects who inhaled mint and lily-of-the-valley aromas while performing a boring computer task made 25% fewer errors than those who breathed unflavored air. Starting from this study, particularly research centers in Japan conducted extensive research studies on how essential oil aromas impact attention and concentration (Griffin, 1993).

Nonetheless, many research studies have started from the search for solutions to solve current challenges at the level of medical systems or care facilities, such as

minimizing preoperative anxiety, which is a common issue in hospitals (Wotman, et al., 2017).

Consequently, a study conducted in 2017 by the *Department of Otolaryngology–Head and Neck Surgery* and by the *Department of Healthcare Policy and Research, New York - the Presbyterian/Weill Cornell Medical College, New York, U.S.A.* on the efficacy of lavender aroma in reducing preoperative anxiety in ambulatory surgery patients undergoing procedures in general otorhinolaryngology *(The Efficacy of Lavender Aromatherapy in Reducing Preoperative Anxiety in Ambulatory Surgery Patients Undergoing Procedures in General Otolaryngology)* (WHO, Mental disorders, 2022) started exactly from the fact that, irrespective of the severity of surgery, patients can experience considerable apprehension (fear, anxiety, worry) because of the fear of surgery, anesthesia and of postoperative pain, shown to have a negative impact on patients.

Physicians determined that the presence of an intense state of preoperative anxiety generates an increased use of narcotics and anesthetics, a prolonged duration of hospitalization and of postoperative wounds healing, a diminished ability of the body to fight infections and, last but not least, a decrease in the ability to understand information about surgery.

Pharmacological therapies, such as sedatives and opioids, are often used to treat preoperative anxiety, however, these drugs have unwanted side effects, including fatigue, confusion and restlessness, and (Najafi, Taghadosi, Sharifi, Farrokhian, & Tagharrobi, 2014) can bear on the patient's ability to actively participate in postoperative care and may delay discharge (Kim, et al., 2011).

The eight-month study involved 100 patients, who were admitted to New York-Presbyterian/Weill Cornell Medical Center for outpatient surgery, and the conclusion was explicitly worded as a recommendation: Given *"the adverse effects of preoperative anxiety and the simplicity of aromatherapy, healthcare providers would need to consider using preoperative lavender aromatherapy in ambulatory surgery."*

CONCLUSION

Invariably, for anyone, the road to finding a solution to improve a cognitive-emotional disorder is extremely toilful, and it becomes itself a psychological challenge.

For the management of such a "human experience", the protocols of classical therapy are by no means sufficient. The confines of conventional, allopathic or psychological, treatments have to be admitted. Human beings need considerably more in order to reactivate that original "setting" that leads them to healing. And one of the ways, perhaps the smoothest, most pleasant and free from adverse effects, is to use aromas, and not empirically and intuitively, but scientifically.

As might be expected, one could argue that there are still not enough studies to entail the inclusion of aromas in the treatment protocol of serious mental disorders. However, the studies that already exist unequivocally highlight the extraordinary benefits that aromas bring in support of any form of psychological therapy.

Each person suffering from a cognitive-emotional disorder have their own "life story" that brought them to this point of suffering, where healing can only come through a holistic approach, centered on the patient and their particular needs, and aromas, psycho-aromatherapy, sustained aroma therapy, abundantly address these requirements.

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