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12 STEPS AND ABSTINENCE: HOW DO I STAY SOBER?

TAMAS HETENYI[1], IBOLYA KOTTA[2]

ABSTRACT. The present study was conducted among 12-steps communities of recovery (Alcoholics Anonymous, Narcotics Anonymous) in Hungary. As these communities become more and more frequented, it is of interest to explore how recovering addicts implement their specific program of recovery and what psychological characteristics are affected by this process.
The study presumed that longer time in abstinence predicted lower levels of chronic stress and higher levels of subjective well-being, given that participants were working actively on their sobriety/recovery. Thus, it was assumed that more intense work on sobriety would lead to lower levels of stress and higher levels of well-being.
After filtration, N = 148 recovering addicts were included in the study. The participants completed a test-battery including queries on sobriety efforts (SEQ); Perceived Stress Survey (PSS-13) and the shortened version of WHO's well-being questionnaire (WB15).
The results show that abstinence doesn't influence levels of stress neither in itself nor through active work on recovery. Nevertheless, a more intense work on sobriety (adhering to the 5 suggestions of 12 step program) predicted higher levels of subjective well-being. Recovering addicts commit themselves most actively to the recommendations of the 12-step communities during their first to five years of their abstinence.
Our study makes a stand for anonymous recovery programs and argues that active efforts of maintaining sobriety are essential for sustainable recovery and long-term sobriety, and adherence to the five recommendations of these 12-step communities predict subjective well-being.

Keywords: *12 step program, recovery, abstinence, efforts of sobriety, perceived stress, subjective well-being*

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Introduction

AA and NA

As stated by Humphreys (1999) and White (2012), even though there is an extensive network of professional institutions dealing with various forms of addiction in the United States, self-help groups are the most common way of seeking help in the field of drug addiction. Today, anonymous communities are available in almost any country in the world, including Hungary, offering a solution for those who want to recover from their addiction. Alcoholics Anonymous (AA), existing since 1935, is present in about 180 countries, with a number of 125,000 groups per week and approximately 2.1 million members, according to a 2018 survey by the organization. Narcotics Anonymous (NA) has 58,000 groups worldwide (Galanter, 2013).

Regarding the 12-step communities in Hungary, AA has approximately 160 meetings per week, while NA is present with 47 meetings per week nationwide. As per the experience of the 12-step groups, it is possible to recover from substance abuse and live a full life with abstinence.

12 Steps and Abstinence: How Do I Stay Sober?

A comprehensive meta-analysis by Emrick and Beresford (2016) points out that the abstinence rate of those actively participating in AA, NA, and other 12-step groups is impressively high (42% of alcohol-dependent people who are regularly involved in the 12-step programs were still stably abstinent over the next four years. In their study's results, Majer et al. (2013) describe that those who consistently and actively participated in (the activities of) 12-step groups were significantly more likely to maintain stable abstinence the next two years, compared with those who were less involved. Kelly et al. (2009) synthesized scientific research on AA and other related 12-step programs and found that they are at least as useful as other intervention approaches. However, the exact way 12-step programs achieve these results is less clear to us. How to keep someone abstinent? How to get involved with the community and run the program? Issues of this nature, which are also addressed in our article, point in the direction that a more detailed understanding of the mechanisms of AA and other 12-step programs could contribute to a better planning of the methodology and timing of addiction-related interventions, and the concept of recovery in general.

Conceptual definition of recovery

The 12-step anonymous communities talk about abstinence-based recovery. According to their concept of addiction, chronic substance use is a

progressive and fatal disease (Narcotics Anonymous World Service, 2012) that cannot be cured but can be rendered asymptomatic with abstinence so that the individual becomes able to live a full life. Professional attempts to conceptually define recovery are still ongoing, and the lack of an accurate definition makes it difficult to study. At their first meeting in 2006, the Betty Ford Institute (BFI) experts aimed to formulate an introductory definition of recovery that could serve as a starting point for subsequent professional discourse, research, and understanding. According to them, the consensual phrasing is the following: Recovery is a voluntary lifestyle that includes sobriety, personal health, and citizenship (exercising civil rights and responsibilities) (McLellan, 2009). Thus, the concept of recovery does not equal mere abstinence, it must be understood as a broader concept. In the definition of SAMSHA (Substance Abuse and Mental Health Services, 2020), "recovery from alcohol and drug problems is a process of change in which an individual gains abstinence and improved health, well-being, and quality of life". Nagy (2018) aptly highlights that 12-step programs define sobriety as a change in thinking, speaking, and acting. Furthermore, for anonymous communities the successful maintenance and operation of sobriety, is only conceivable in the context of a basic change of lifestyle and attitudes.

How does the program work?

According to Robert Lefever (2000), anyone who wants to stay in recovery from their addiction should actively work on the 12-step program, because this is the only therapeutic approach that can improve quality of life and enhance mood sufficiently enough to fill the internal void left by chronic substance use on a daily basis.

According to the author, it is due to this active work of self-transformation that the individual does not return to the use of destructive substances, processes, or relationships later any time in the future (Lefever, 2000). In their study of the mechanisms of program effectiveness, Kelly et al. (2009) describe that AA helps individuals recover through self-efficacy, coping strategies, increasing motivation, and changing an individual's social network.

In a study with recovering drug addicts (DeLucia et al., 2015) participants articulated characteristic, emphatic motives of the program (e.g., learning to take responsibility through the program) and their personal experiences (e.g., gaining greater self-knowledge) that are considered critical to the success of recovery. The 12-step community was described by study participants as a supportive, retaining, and essential element. A feature of 12-step programs is that while they return the responsibility to the addict, they

do not force any treatment on them, they do not reach out to members. At the same time, they make strong suggestions and recommendations as to what the addict should do if he or she chooses this path or if he or she wants to become sober. Among the plethora of slogans and guiding strategies spread through "oral tradition" that characterize anonymous communities, there are five recommendations from the AA and NA literature that will be key indicators of our research and which are as follows: *1. Do not use!* (Complete abstinence from drugs / alcohol) *2. Attend meetings! 3. Have a sponsor! 4. Take service! 5. Work on the steps!*

Subbamaran et al. (2011) conducted a study with members of AA / NA / CA (Cocaine Anonymous) in the process of developing the MAAEZ (Making Anonymous Alcoholics Easier) program. This program aimed to help addicts (even after a rehabilitation treatment) find their way into 12-step communities and be able to use them appropriately. The MAAEZ program included exercises such as applying for a temporary sponsor, role-playing games, ideas for sober ways of entertainment, etc., highlighting how the 12-step program can be applied most effectively. In those subgroups of the study that previously attended AA / NA or CA meetings, the effect of MAAEZ on maintaining 12-month abstinence was explained in approximately 5–11 % by doing service in the community (*4. Take service!*), while having a sponsor relationship (*3. Have a sponsor!*) accounted for 22–25 % of the total impact. Wendt et al. (2017) also describe in their results that the existence of a sponsor relationship predicted a higher probability of abstinence in recovering addicts who had previously used stimulants. Greenfield and Tonigan (2012) examined how step work in 12-step programs can predict abstinence or subsequent substance use. According to their results, the work on the 12 steps can be divided into two distinct factors in terms of its effects: spiritual and behavioral effects. The spiritual factors of step work were able to predict the percentage of later abstinent days.

Sobriety-work

Nagy (2014) calls *sobriety-work* the recovering addict's pursuit for change, which presupposes a series of active, continuous, community-based operations aimed at both the recovery of the person performing them and the strengthening of the person's supportive community. Although Nagy's concept of sobriety-work does not refer strictly to compliance to the five suggestions of the 12 step programs, as it also comprises self-knowledge, spirituality and other factors, in this study the effort of maintaining sobriety was operationalized as the adherence to the five suggestions, a well-quantifiable indicator.

Recovery, stress and life satisfaction

Stress and recovery, or relapse to substance use, has been the subject of many research studies. Haleem (1996) described exposure to stressors as the most reliable experimental manipulation to restore substance use in previously substance-dependent rats. Gonzales et al. (2012) studied young drug addicts who already experienced a relapse during their recovery with regards to their treatment response. They were asked to conceptualize in retrospect the factors that they felt were determinants of the process leading to relapse. Life stressors were cited as such by 85 %. Hagen et al. (2017) in their research examined whether substance-dependent individuals who maintain continuous abstinence for at least one year show improvement in psychological characteristics such as perceived psychological distress (SCL-90-R) or life satisfaction (SWLS). Their results showed that participants who maintained a one-year abstinence showed significant improvement in both factors clinically as well as statistically. Laudet (2008) describes that the measured stress level of addicts in recovery decreases significantly, as time spent in recovery increases. In his research, Laudet examines the evolution of these variables through mediators of religiosity, spirituality, belonging and meaningful life. According to his results, recovering addicts accumulate a kind of "sobriety capital" that significantly reduces the stress in their lives and increases their satisfaction with their lives in the long run. Hosseini et al. (2016) state in their study that consistent participation in the NA community is significantly associated with higher life satisfaction in drug addicts. Yang et al. (2018) describe in their research findings that recovering drug addicts who have received stronger social support in recovering communities have reported higher life satisfaction and lower stress.

Well-being

Well-being is primarily a psychological, cognitive, health-related, behavioral, and social concept. The WHO defines mental health as "a state of well-being in which the individual is able to realize his or her abilities, cope with stressful situations in normal life, be able to work productively, and contribute to the life of his or her community" (World Health Organization, 1998).

Considering the nature and characteristics of the concept of recovery described above, we found that the changes in the psychological construct of well-being through the process of recovery is worth examining too, in addition to the perceived stress.

In the present study, we aimed to explore whether maintaining abstinence in itself, or abstinence coupled with a more intense sobriety-work (as indicated by adherence to the five recommendations) is predictive of

perceived stress levels or subjective well-being in people who identify as recovering drug addicts who participate in 12-step programs (typically in AA or NA groups) in Hungary.

We hypothesized that in the course of recovery from substance abuse:

Hypothesis 1. Higher efforts of recovery will be associated with lower perceived stress.

Hypothesis 2. Higher efforts of recovery will be associated with higher subjective well-being

Hypothesis 3. Active efforts to maintain recovery will mediate the relationship between duration of abstinence and low perceived stress.

Hypothesis 4. Active effort to maintain recovery will mediate the relationship between duration of abstinence and high subjective well-being.

Method

Participants

Volunteers (N = 148) identifying themselves as recovering from substance addiction participated in the online survey. Convenience sampling method was applied, sample was not representative for Hungary nor Hungarian recovery communities. Mean age was 41.6 years (*SD* = 9.3), 101 (68.2 %) were male participants. Most frequently, opiates, amphetamines and alcohol were declared as consumed substance. Sample was heterogenic in terms of marital status and addiction related characteristics. Descriptive statistics for demographic data are presented in Table 1, while substance abuse related data are presented in Table 2.

Table 1. Demographics

Total sample (N=148)	Mean ± SD / Frequency (percentages)
Age	41.6 ± 9.3
Gender	
Male	101 (68.2 %)
Female	47 (31.8 %)
Marital status	
Single	60 (40.5 %)
Married	30 (20.3 %)
Divorced	22 (14.9 %)
In relationship	32 (21.6 %)
Widow	4 (2.7 %)

Instruments

Demographics and queries on recovery effort. Beyond basic demographic data, several addiction-related data was also requested to measure the efforts subjects invest in the maintenance of recovery. Inspired by Nagy (2015) questionnaire on sobriety-work, items referred to addiction (duration, substance, no of trials to quit), duration of abstinence, presence in 12-step program/community, treatment prior to 12-step program, effort to achieve and maintain recovery in the present and in the past, social network, relapse and addiction related medical conditions.

Table 2. Descriptives for substance abuse related variables

Total sample	Mean ± SD / Frequency (percentages)
Abstinence/duration of sobriety	
1.12 month	17 (11.5 %)
1-5 years	61 (41.2 %)
> 5 years	70 (47.3 %)
Duration of active substance use	
> 10 years	116 (78.4 %)
5-10 years	21 (14.2 %)
2-5 years	10 (6.8 %)
< 2 years	1 (.7 %)
Attempts to quit	
Yes/yes, several times	131 (88.5%)
No, this is the first time	17 (11.5%)
Who proposed participation in 12 step program?	60 (40.5 %)
Rehabilitation program	30 (20.3 %)
Acquaintance/friend in recovery	26 (17.6 %)
Physician/psychiatrist	11 (7.4 %)
Social worker	1 (.7 %)
Psychologist	20 (13.5 %)
Other	
Participation in long-term rehabilitation/therapy	65 (43.9 %)
Yes, and completed it	31 (20.9 %)
Yes, but quit	52 (35.1 %)
No	
Frequented communities/ sessions	
AA	70 (47.3 %)
NA + AA	36 (24.3 %)
Other communities (CODA, ACA, Al-anon)	38 (25.8 %)
None	4 (2.8 %)

Total sample	Mean ± SD / Frequency (percentages)
No of frequented sessions per week in the past year (during abstinence)	
Almost daily	9 (6.1 %)
1-2 per week	61 (41.2 %)
2-3 per week	47 (31.8 %)
< 1 per week	31 (20.9 %)
Having a home group	
Yes, currently	96 (64.9 %)
Not now/Never	52 (35.1 %)
Service in community	
Yes, currently	84 (56 %)
Not now/Never	64 (43.2 %)
Having a sponsor	
Yes, currently	91 (61.5 %)
Not now/Never	57 (38.5 %)
Undertaking sponsorship	
Yes, currently	46 (31.1 %)
Not now/Never	102 (68.9 %)
Actively working on the steps	
Yes, currently	69 (46.6 %)
Not now/Never	79 (53.4 %)

Perceived Stress Scale (PSS, Cohen et al., 1993). The Perceived Stress Scale was developed to measure how subjects perceive stressing life events. The scale measures perceived stress on a 5-point Likert scale (1-never, 5-almost always). PSS is a widely used scale in normal and clinical populations (e.g. Jovanović & Gavrilov-Jerković, 2015; Schneider et al., 2020). Authors reported high internal consistency of the 10-item version of PSS and Cronbach-alpha was found to be good (α = .79) on a Hungarian sample (Stauder & Konkoly-Thege, 2006), as well. In the current study Cronbach alpha (α = .87) was found to be high.

Well-being Scale. The 5-item scale elaborated is the most widely used instrument to measure subjective well-being. On a Hungarian sample, Susánszky et al. (2006) found good internal consistency (α = .85). In the current study reliability was found high α = .80.

Design and procedure

To gather more exploratory data and to validate responses on the newly developed query on recovery efforts, three semi-structured interviews with recovering addicts and several months of fieldwork (participatory observation)

in anonymous meetings took place beforehand. The final version surveys the exact steps of practicing the program and the length of time in abstinence.

A cross-sectional design was applied. Survey link was distributed in closed social networking communities of the 12-step recovery program. During the six week of data collection 400 members received the survey link, and 148 completed all questionnaires adequately and declared themselves addicts in recovery. Other respondents either claimed not to be addicts in recovery or declared themselves as actively dealing with substance abuse. Thus, the final sample consisted of N = 148 respondents declaring themselves as being in the process of recovery from some form of substance abuse. Prior to data collection, informed consent was obtained highlighting the anonymity of participation. Study is in line with research ethical standards.

Data analysis

Statistical analysis was performed via IBM SPSS 25, except for mediation models where Jamovi package in R was applied.

Descriptive statistics were performed for demographics and addiction related responses, as follows: frequency and percentage for categorical variables, mean and standard deviation for continuous variables. Internal consistency of scales was tested by calculating Cronbach alpha values. Normality of variables was tested by Shapiro-Wilk test at $p < .05$ significance level and non-parametric statistics were performed for non-normally distributed data.

For multiple regression enter method was applied including all predictors in the regression equation. The two-step cluster analysis with log-likelihood measure and Schwartz's Bayesian Information Criterion (BIC) was performed to reveal natural groupings within the data set. No prescribed number of clusters was suggested. Components of recovery effort (dichotomous variables) were set as classifiers. Differences in sample characteristics according to cluster membership were compared using one-way ANOVA for continuous variables and Chi-square statistics with Cramer's V effect size measures for categorical variables. Levene's Test of Equality of Error Variances was performed to check for the error variance of the dependent variable is equal across the groups.

Results

Descriptive statistics

Descriptive statistics for perceived stress and well-being are presented in Table 3. Mean score on PSS was $M = 17.7$ ($SD = 5.4$) out of a maximum of 40 points attainable, while for WBS M = 8.25 ($SD = 2.78$) out of a maximum of 15 points attainable.

Table 3. Descriptive Statistics and Correlations for Study Variables

Scale	n	Mean (min — max) /%	SD	1	2	3	4
1. Perceived stress	148	17.703 (5 — 37)	5.465	—			
2. Well-being	148	8.256 (1—15)	2.777	.606***	—		
3. Recovery effort	148	0.000 (-6.82—7.00)	4.373	.022	.283***	—	
4. Abstinence	148			.111	.125	.100	—

Note. Spearman's rho; * p < .05, ** p < .01, *** p < .001

Hypothesis 1.

Components of recovery effort (participating on meetings, service in community, actively working on the steps, having a sponsor, attaining a home group) were analyzed as predictors of subjective well-being in the model. Results show that although none of these components have a significant individual contribution to the model, all together they significantly predict subjective well-being (F (6,140) = 2.57; p < 0.5, aR^2 = .0606.)

Hypothesis 2.

Similarly, components of recovery effort were examined as predictors of perceived stress, and the model was found not to be significant (F (6,139) = .909; p = .49; aR^2 = -.004).

The better understand the possible patterns of efforts to maintain recovery and to delineate profiles by the components of recovery effort, two-step cluster analysis performed. As a result, four predictors were found to have relevance, and three clusters emerged in this model. The Silhouette clustering quality index (average .05) proved to validate this two-step cluster solution; the model fit was good.

The composition of the clusters and the importance of variables within the cluster were examined. Clusters were identifiable as “active” group with all members actively working on the 12 steps, attaining a home group, having a sponsor and having service in community, as well, “passive” group with none of its members working actively on the 12 steps, nor having a home group, a sponsor or a service in community, and “labile/mutable” group (see Table 4).

Actively working on the 12 steps proved to be the strongest predictor (= 1), followed by attaining a home group (= .99), having a sponsor (= .91), and having service in community (=.89).

Table 4. Two-step cluster analysis and cluster characteristics

Cluster descriptor	Active group	Passive group	Mutable group
Cluster size	34.7 % (n = 51)	28.8 % (n = 35)	041.5 % (n = 61)
Input variables (classifiers)			
Presently working active on the 12 steps	100%	0%	29.5%
Presently attaining a home group	100%	0%	73.8%
Presently having a sponsor	100%	0%	63.9%
Presently having service in community	100%	0%	54.1%
Age	40.37 (9.37)	41.02 (8.08)	43.03 (9.90)
Sex			
male	35 (68.6%)	41 (67.2%)	24 (68.6)
female	16 (31.4%)	20 (32.8%)	11 (31.4%)
WBS	8.94 (2.73)	7.17 (2.34)	8.30 (2.91)
PSS	17.82 (5-73)	17.20 (4.60)	17.83 (5.79)
Duration of abstinence	Frequency (% within cluster/abstinence)	Frequency (% within cluster/abstinence)	Frequency (% within cluster/abstinence)
< 1 year	1 (2% /5.9%)	9 (25.7% / 52.9%)	7 (11.5% / 41.2%)
1-5 years	28 (54.9% / 45.9%)	12 (34.3% / 19.7%)	21 (34.4% / 34.4%)
5 years	22 (43.1% / 31.9%)	14 (40%% / 20.3%)	33 (54.1% / 47.8%)

When differences between cluster groups were examined, significant differences were found with regard to age $F(2,145) = 5.74$, $p = .005$. No group differences in PSS, $F(2,144) = .18$, $p = .84$, but significant group differences in

WBS $F(2,144) = 4.40$, $p = .014$ were found. Scheffe post-hoc analysis for pairwise comparisons revealed that the active group declared significantly higher well-being as compared to the passive group, $p = .014$. The three clusters were then compared by the duration of abstinence to get further information about the characteristics of the groups. More than half of the participants who declared being abstinent for less than 1 year belong to the passive group, while almost half of those being abstinent for 1-5 years belong to the active group. The majority of participants with a more than five years duration of abstinence are members of the mutable cluster. For detailed presentation of observed frequencies see Table 4. Chi-square statistic revealed a significant relationship between cluster membership and duration of abstinence, $\chi^2 = 14.691$, $p = .005$, with a low effect size, Cramer's $V = .224$.

Figure 1

Model 1

Mediational model of efforts of recovery on the relationship between duration of abstinence and perceived stress

Model 2

Mediational model of efforts of recovery on the relationship between duration of abstinence and subjective well-being

Hypothesis 3.

In the first mediation model we tested whether abstinence can predict perceived stress directly or indirectly through the effort of recovery (Figure 1). The model was found to be not significant, $F(1,146) = 2.437$, $p = .121$, $R^2 = .016$.

Neither the indirect (abstinence – efforts of recovery – perceived stress), $\beta = .001$, nor the direct path (abstinence – perceived stress), $\beta = -.108$ was significant in our mediation model (see Table 5).

Table 5. Results of mediation analysis: Efforts of recovery on the relationship between duration of abstinence and perceived stress

				95% C.I. (a)				
Type	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
Indirect	abstinence ⇒ recovery efforts ⇒ perceived stress	0.00260	0.0848	-0.164	0.169	3.24e-4	0.0307	0.97
Component	abstinence ⇒ recovery efforts	0.82384	0.5242	-0.204	1.851	0.12812	1.5716	0.11
	efforts of recovery ⇒ perceived stress	0.00316	0.1030	-0.199	0.205	0.00253	0.0307	0.97
Direct	abstinence ⇒ perceived stress	-0.87357	0.6620	-2.171	0.424	-0.10873	-1.3196	0.18
Total	abstinence ⇒ perceived stress	-0.87096	0.6588	-2.162	0.420	-0.10840	-1.3221	0.18

Note. Confidence intervals computed with method: Standard (Delta method); Betas are completely standardized effect sizes

Hypothesis 4.

Table 6. Results of mediation analysis: Efforts of recovery on the relationship between duration of abstinence and subjective well-being

				95% C.I. (a)				
Type	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
Indirect	abstinence ⇒ efforts of recovery ⇒ subj. well-being	0.139	0.0974	-0.0523	0.330	0.0339	1.42	0
Component	abstinence ⇒ efforts of recovery	0.824	0.5242	-0.2036	1.851	0.1281	1.57	0
	effort of recovery ⇒ subj. well-being	0.168	0.0502	0.0698	0.267	0.2649	3.35	<
Direct	abstinence ⇒ subj. well-being	0.441	0.3230	-0.1926	1.074	0.1079	1.36	0
Total	abstinence ⇒ subj. well-being	0.579	0.3334	-0.0743	1.233	0.1418	1.74	0

Notes. Confidence intervals computed with method: Standard (Delta method); Betas are completely standardized effect sizes

Next, we tested whether sobriety-work mediates the relationship between abstinence and subjective well-being (see Figure 2). The mediation model was insignificant, both the indirect (β = .034; p > .05) and direct path (b = .824, SE = .528, t(146) = 1.561, p = .121, β = -.128) was below statistical significance.

Discussion

As 12 step programs become more and more popular in Hungary among recovering addicts, and new recovery-based treatment centers emerge (National Psychiatric and Addictology Institute; Szigetvár Addictology), more in-depth studies of this subject are needed to promote progress in the field of medicine, as well as clinical psychology.

Addiction recovery is a long-term process. Sustained stable recovery presumes strengthened sobriety skills. These skills refer to the challenging endeavour of maintaining sobriety and dealing with problems commonly encountered by recovering addicts. In the present study we aimed to explore the way efforts of sobriety as advocated by the 12-steps recovery programs, relates to perceived well-being and distress in a heterogenic sample of recovering substance addicts at various stages of sobriety.

With respect to the study sample, it is essential to mention that two-third of our sample attended a rehabilitation therapy, and almost every second participant completed a long-term drug or alcohol rehabilitation therapy before attending the 12-step community. It is noteworthy that nearly half of the participants are abstinent for more than five years, suggesting the beneficial role of long-term rehabilitation programs.

Perceived stress

The hypothesis regarding the mediation effect of the sobriety-work on the relationship between abstinence and perceived stress showed that by itself, the duration of abstinence does not predict the perceived stress, but neither the efforts of recovery acts as a mediator between these variables. Abstinence does not predict perceived stress, regardless of its duration and the active efforts of maintaining it.

Therefore, the results did not confirm our expectations regarding the effects of recovery efforts on the level of perceived stress. Daily stress of addicts in recovery proved not to be related to the adherence to the five recommendations of the 12-step programs. Though we also hypothesized that the duration of

abstinence can only predict low perceived stress and high subjective well-being in the presence of active efforts to maintain recovery, in our study the abstinence/ the duration of recovery was found to be unrelated to the level of stress. Additionally, participants who actively put efforts into maintaining recovery (e.g., working on the 12 steps, having a sponsor, having a home-group, participating on meetings, taking a service) show no difference in perceived stress as compared to the participants clustered as passive or mutable in terms of ongoing efforts of recovery.

This result disproves Laudet (2018), who had shown that the duration of abstinence was related to lower levels of stress. Moreover, several data in the literature (Haleem, 1996; Gonzales, 2012) shows that stress is one of the most powerful predictor of addiction relapse. Accordingly, for a long-term abstinence, low levels of perceived stress are essential. In the interpretation of the lack of association found in the present study, we might consider that current stressors encountered by participants may be independent of the level or quality of recovery, an idea confirmed by the interviews conducted with recovering addicts. These indicated that recovery is not consistent, but rather an unbalanced state with alternating stressful and more balanced periods. Furthermore, the scale chosen for the assessment of perceived stress refers only to one month preceding the data collection. Our results are in line with the idea that by its nature, recovery from substance abuse is not linear.

Subjective well-being

Results also show that the duration of abstinence cannot predict subjective well-being either, and the efforts of recovery does not act like a mediator in between the two variables. Subjective well-being was found to be positively related to some components of the five recommendations of the 12-step programs, and adherence to these recommendations all together, but not individually, predicted the subjective well-being. Therefore, actively putting effort on the maintenance of recovery, as specified by the 12-step communities, predicts higher well-being in recovering addicts, confirming our hypothesis. This goes along with the finding that active participants, as clustered in the analysis (currently working on the steps, having a sponsor, having a home group, participating on meetings) exceed passive and mutable participants in self-rated well-being. Furthermore, participants being sober for less than one year found hard to comply with the five recommendations. Several reasons might lie behind this finding that should be clarified in future research. For example, integration in 12-step communities and commitment to their recommendations takes time, and one year might be far too short for

assimilation. Failure to assimilate the five recommendations might lower one's chance to achieve and exceed one year of abstinence, however the present study does not provide the frame for interpreting the association in terms of cause-and effect. It is essential to also consider that half of the sample already attended and completed a long-term rehabilitation program, so the first months of sobriety often coincides with or partially overlaps rehabilitation. In this phase, addicts are not yet fully committed, active members of the anonym community. A gradual increase in the adherence to the five recommendations is also supported by the finding that addicts with one to five years of sobriety are active in efforts of maintaining recovery as approached by the 12-step communities. At the same time, participants being sober for more than five years are heterogenic in terms daily endeavour. Therefore, the practice of the recommendations of these communities varies in virtue of individual needs. The program offered by these anonym communities gives ground for all members to freely apply the recommendations as it is best for them. These are indeed recommendations and not rules or assignments, and membership is not conditioned by their fulfillment. This goes along with the slogan of these communities, asseverated on their regular meetings, namely that "*It works, if you work it.*" Recovering addicts may only maintain long-term sobriety if they judge that it worth the effort, and they feel alright with their lives. Addicts therefore actively govern their own recovery and the maintenance of sobriety. The recommendations of the 12-step communities provide support for this process. Our study shows that adherence to these guidelines is associated not only to the higher probability of sobriety, but also to better subjective well-being. According to present knowledge, nothing guaranties that one can evade relapse, sobriety is not granted and addiction is not curable. However, if through the practice of the recommendations one goes through change and self-progression, this may be a convincing promise of a fuller, drug-free life.

Limitations and future directions

Our study makes a stand for anonymous recovery programs and argues that active efforts of maintaining sobriety are essential for sustainable recovery and long-term sobriety, and adherence to the five recommendations of these 12-step communities predict subjective well-being.

Despite these contributions, this research has some limitations. In the sampling process recovering addicts were included based exclusively on self-identification. No professional diagnosis was provided. To a certain extent, this enhances the probability of false positives: not everyone who considers

themselves addicts are indeed presenting the clinical characteristics of substance addiction. At the same time however, the list of queries chosen for this study aimed at response validation, so it not only prompted to the type of substance used, but to several aspects of substance use, duration of abstinence, former attempts to quit, as well. Therefore, it is reasonable to consider after all that the sample consists of substance addicts, indeed.

Scientific approach to recovery from substance abuse advocates for longitudinal and follow-up studies in the exploration of the mode of action of the techniques applied in favor of recovery. Our study however is a cross-sectional one. Responses were collected referring to the period of the last four weeks preceding data collection. This in turn may hold some bias: if a more stressful period coincides with the timing of the survey, responses may be irrelevant to the recovery in its entirety. Recovery is progressive, but inharmonious, non-linear, so one-time data gathering cannot be extrapolated to the whole course of recovery. Moreover, the present study design is not suitable for interpreting the associations between efforts of recovery and subjective well-being in terms of cause-and effect neither on the level of the whole sample, nor in the three clusters (active, passive and mutable) outlined based on active adherence to the five recommendations.

The phases of recovery could have been better differentiated. Instead of Betty Ford Institute's trichotomy, a partition based on Gorski's theory might have brought additional information especially in the delimitation of sober addicts for more than five years. More than half of the sample fell into this category, but BFI trichotomy did not allow any statistical grouping within the category. This would have been important, as different approaches to sobriety might be characteristic for those who are sober for five years than those who are sober for decades.

And finally, almost two-third of the sample participated some form of rehabilitation, and the majority completed it before data collection, possibly before joining the 12-step program. This is a fact that cannot be ignored when assessing sobriety. This is even more pronounced when predictors of the quality and stability of sobriety are targeted. Obviously, a professional treatment cannot be disregarded. In this study, although we asked about the participation in and completion of such rehabilitation programs, and also the number of sessions was noted, but no information regarding the type of these programs were collected. We have no data about the effect of these treatment programs on the quality and duration of sobriety, nor their beneficial effect on the psychological factors of subjective well-being and perceived daily stress, as measured in the present study. All these may serve as a starting point for future researches.

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ADVANCED THEORY OF MIND AND EXECUTIVE FUNCTIONS DURING MIDDLE CHILDHOOD

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ABSTRACT. The understanding of the mind and its relation with cognitive abilities during middle childhood is still limited. One dimension of it, the interpretive diversity understanding, represents an understanding that people can have different interpretations of the same situation due to differences in their beliefs, attitudes, and knowledge. We aim to investigate, for the first time in literature, three dimensions of advanced *theory of mind* (ToM): faux-pas understanding, strange stories and *interpretive ToM*, in relation with *executive functions* (working memory, inhibition and switching), in an emotional framework (anxiety symptoms) during *middle childhood* (9-12 years). Results revealed that the three ToM abilities did not correlate with each other, and only strange stories correlated with inhibition and switching. On the other hand, the total ToM score based on the three measures was predicted by working memory and comprehension. These results support the approach to ToM as a non-coherent construct in middle childhood, and the need for further research that looks at the subdimensions included under the executive functions and ToM umbrella. Understanding the relationship between ToM dimensions, as well their interdependence with executive functions is essential for preventing early social and cognitive difficulties during middle childhood.

Keywords: *theory of mind, interpretive theory of mind, executive functions, middle childhood*

The ability to reason about the mind, to infer another individual's mental activity (e.g., beliefs, desires), to interpret and predict behavior is called theory of mind (ToM; Wellman et al., 2001). This widely researched ability is best known for the first order ToM that appears at around the age of 4 years, and

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reflects the understanding that people can hold diverse beliefs, different from their own and reality, and act upon it (Wellman et al., 2001). As they age, children become increasingly better at inferring complex mental states, relation between beliefs, emotions and behaviors, as well as understanding ambiguous social situations (Millers, 2000; White et al., 2009). Advanced ToM improves throughout middle childhood into adolescence and adulthood (Dumontheil et al., 2010), playing a paramount role in a healthy development. Research up to date supports ToM associations with peer acceptance (Slaughter et al., 2015), prosocial behavior and general social competence (Devine et al., 2016). There is extensive research on ToM in preschoolers, compared with the paucity of knowledge during middle childhood (Hughes & Devine, 2015). The contradicting findings in the literature indicate the possibility of a multi-process ToM during this age frame (Schaafsma et al., 2015). The term ToM could denote an umbrella for complex abilities that have a differential progression (Osterhaus et al., 2016), and relate differently to other important cognitive and contextual factors (Weimer et al., 2021).

Advanced ToM was approached in this study with three tasks that tap different aspects of it. The *Strange Stories (SS) task* measures the understanding that the emotional and behavioral reaction of an individual depend on how they interpret the messages communicated by another individual (Happé, 1994; White et al., 2009). Designed originally for an autistic population (Happé, 1994), it has been used since then in typically developing middle childhood (Lecce et al. 2014), as well as adolescent populations (Caputi & Schoenborn, 2018; White et al., 2009). It not only deals with children's belief understanding, but also with their capacity to reason in complex and realistic social situations as well (Devine & Hughes, 2013, 2016).

Faux-pas understanding is also concerned with children's understanding of complex situations, in the sense of recognizing transgressions of social norms (Baron-Cohen et al., 1999). The third ability and of utmost interest for our study is *Interpretive ToM*, also included under the interpretive diversity understanding umbrella (Millers, 2000). Over the years, children gradually understand that inferring another person's belief requires not only consideration to their access to information (first order ToM), but also to their active constructivist mind processes (Millers, 2000; Pillow, 1991, 1995). Therefore, people can form different interpretations of the same situation due to their prior subjective experience, beliefs and attitudes (Lalonde & Chandler, 2002). Developmental changes in ToM are influenced to a large degree by cognitive processes, and those of interest for this study are the executive functions (Carlson & Moises, 2001).

Executive functions (EF) encompass a variety of higher-order processes, such as inhibitory control, working memory (WM), and shifting, necessary in deployment of cognitive activities, such as planning, reasoning and problem solving (Diamond, 2013; Miyake et al., 2000; Zelazo & Muller, 2011). These

cognitive processes underlie emotional, thought and behavioral regulation (Diamond, 2013; Rueda et al., 2012). They support the supervision of the ongoing behavioral and thought process, adjusting to current goals and new information when necessary, as well as implementing a behavioral plan while inhibiting a non-desirable response (Diamond, 2013). The relation between EF and ToM has been widely supported, especially in preschoolers, as ToM emergence has been documented to heavily rely on EF (Carlson & Moses, 2001; Devine & Hughes, 2014). However, it is still unclear how EF contribute to the developmental changes in ToM across middle childhood, if and how their relationship changes compared to earlier years (Weimer et al., 2021).

The literature is inconclusive, with some studies stressing the unique role WM has in further advancements in mind reasoning (Lecce et al., 2017; Lecce et al., 2018), while others found attention shifting and WM updating to be associated with ToM in middle childhood, as well as longitudinally predicting it one year later (Austin et al., 2014). On the other hand, others found only concurrent links between ToM and EF (Devine et al., 2016), underlying the idea that these abilities develop in tandem (Wilson et al., 2018). Moreover, a conversational-based training on ToM was most beneficial for children with higher WM, supporting the theory that EF help children to advance in their ToM abilities, by allowing them to follow conversations, operate with knowledge, and different points of view (Lecce & Bianco, 2018). Researchers emphasize the need to evaluate each EF ability separately in relation with ToM (Weimer et al., 2021). Differential results on the relation between EF and ToM might emerged as a function of task demands, as the three tasks are inherently different. For example, Im-Bolter and colleagues (2016) supported the joint contribution of shifting, updating and language abilities to SS performance in middle childhood, while for Faux-pas understanding, language, inhibition and reasoning seemed to be relevant (Menhardt-Injac et al., 2020). Others found inhibition and verbal WM to be associated with a better performance on an ambiguous drawings interpretive ToM task (Lagattuta et al., 2010). These results indicate the continuity in these abilities' development during middle childhood, as well as their complex interrelationships (Devine et al., 2016).

Among individual differences that are of significant value when it comes to ToM variability, we can also add comprehension ability, as well as the emotional dimension (Weimer et al., 2021). There is vast support for a deficit in ToM for children with anxiety (Plana et al., 2014), for a variety of symptoms, from panic and separation anxiety (Caputi & Schoenborn, 2018), to social anxiety (Öztürk et al., 2020). Regarding interpretive ToM, in a group of 9-11 years old children, as their anxiety symptoms and number of threatening interpretations of an ambiguous situation increased, their ability to understand that two people can form two different interpretations on the same ambiguous action was reduced (Authors, 2021).

Current Studies

The main aim of our study was to broaden the limited knowledge on advanced ToM abilities and their relationships with a multidimensional view of EF, by using three ToM measures that have not been investigated together before, while also considering a interrelations with a broader emotional framework (anxiety). We focused on middle childhood, as results throughout this age frame are inconclusive (Weimer et al., 2021). We intend to analyze each ability individually, as well as together. Hence, we also computed their sum into a Total ToM score, and used it in the subsequent analyses. Firstly, we anticipated that the three ToM measurements would positively correlate. Secondly, we hypothesized that each EF would positively predict ToM abilities, as well as the Total ToM. Basic abilities for belief reasoning have already been acquired, and the complexity of advanced ToM may be driven by further EF development. Secondly, we hypothesized that children's anxiety symptoms would be negatively related with each ToM, as well as the Total ToM performance, according to the deficit hypothesis.

Method

Participants and Procedure

We recruited 120 primary school children with ages between 9-12 years (*M* = 124.02 months, *SD* = 12.23) from a public school in a northwestern part of XXX. 97% of the families declared XXX as the primary language, and 80% declared their household earnings above minimum wage (National Institute of Statistics, 2021). Their parent's education varied, most of them having finished a bachelor degree (56% of mothers and 45,8 % of fathers; the national average was of approximately 26.3% in 2017; European Commission Romania, 2021).

We included children from schools with the help of the teachers. We initially approached parents from 16 classes, from which approximately 25% agreed to participate. Caregivers' consent and children's verbal assent were necessary for inclusion, and children were free to withdraw from the study or decline to complete any task at any point.

Firstly, parents completed the demographic, as well as the parental version of child anxiety questionnaires. Afterwards, an experimenter tested children with the ToM and IQ tests, individually, online using Zoom or Google meet platforms, all in one session. We counterbalanced the order of the tasks during children's evaluation phase (6 different task order sequences with 20 children per type) in order to distribute evenly any sequence effect. The time between the two phases varied between 1 week and 1 month. An initial a

priori analysis for the upcoming correlational analysis was conducted with G*power (Faul et al., 2017) and revealed that with α = .05 and a power 1−β = .80, we needed 75 participants in order to find effects of 0.25.

Baseline Measurement

Comprehension Test

We used a 21-item subtest from the Verbal Comprehension Index, from the Romanian adaptation of the WISC-IV (Dobrean 2012; Wechlser, 2004), and was applied to evaluate their ability to understand complex social questions and answer them accordingly.

Anxiety Symptoms Measurement

The Revised Child Anxiety and Depression Scale-Parent Versions (RCADS)

RCADS (Authors, 2011; Chorpita et al., 2000) is a 47-item questionnaire used to measure the frequency of the most relevant anxiety symptoms (the Anxiety Subscales are: Generalized Anxiety Disorder Subscale, Social Phobia Subscale, Separation Anxiety Subscale, Panic Disorder Subscale, Obsessive-Compulsive Disorder Subscale, 37 items) and Depression (10 items for Depression Subscale), as indicated by DSM-IV. Responses range from 0 to 3 (0 - *never*, 1 - *sometimes*, 2 - *often*, 3 - *always*). Both caregiver's and children's versions were administered. The RCADS had high internal consistency with α = .91.

Executive Functions Measurements

Listening Span

The experimenter presented sentences and the child answered if they were true or false, providing a yes/no answer, and, at the end of the trial, they are required to recall the last word from each sentence. The series of short sentences become increasingly longer, and six trials were included for each list length. An aggregated span score was computed for each child, following the procedure described by Cowan and collaborators (2003). More specifically, the base span was taken as the highest list length, where at least four trials our of six were correct, to which a score of 0.167 (1/6 trials) is added for every higher list length trial that was correctly recalled. Hence, for example, if a child correctly recalled 6 trials of three-word lists, and 3 four-word lists, an aggregate span of 3 + 3*0.167 = 3.501 was computed.

Inhibition and Switching

We used a task included in the NEPSY-II battery (Korkman et al., 2007), that represents a comprehensive neuropsychological assessment for middle school children. The subtest administered had three sections - naming, inhibition, and switching, each assessing the respective skills. The first one regarded the naming of specific forms, while the second one evaluated the ability to inhibit automatic incorrect response in favor of correct responses, and the last one examined the ability switch between response types. For each correct response children received a score of 1 (maximum score is 80). We divided the total completion time per accuracy for each condition to obtain the inhibition efficiency per condition, and then we calculated the mean of the resulted two coefficients to obtain the Inhibition efficiency. The same was done for the Switching efficiency.

ToM Measurements

Strange Stories

This task measures the understanding that the way an individual interprets a communicated message will influence their emotional and behavioral reaction. It consists of vignettes depicting realistic social situations, each followed by a single question in an open format regarding the understanding of the intention and motive behind the character's behavior (White et al., 2009). Due to time constraints, we selected four of the eight available vignettes: one double bluff, a white lie, a deception and a misunderstanding story. The experimenter read the stories to the child and wrote down their answer. The stories were read again if necessary, which many of the children asked to. The responses were coded on a 3-point scale reflecting the degree of the understanding of the characters' mental states, with 0 - failed understanding, 1 - partial understanding and 2 – full understanding. The total score could vary between 0 and 8. Based on 25 % of the responses, the interrater reliability was very high (Cohen's kappa = .90).

Faux-pas Task

This task measured children's understanding of complex situations, in which transgressions of social norms have occurred. The experimenter read 4 stories to the child and, after each one, asked 4 questions to evaluate children's understanding of the faux-pas (Baron-Cohen et al., 1991). More specifically, a Faux Pas Detection Question ("In the story did someone say something that they should not have said?"), an Identification Question ("What did they say that they should not have said?"), a Comprehensive Question, and a False Belief Question (to recognize that the faux pas was a consequence of a false belief). If the child

succeeded in recognizing that a faux-pas was present in the story, the second question, regarding the faux-pas content, was addressed. Only if the child answered correctly to all the 4 questions, the story was scored with 1, otherwise, it was scored with 0. The total score of one child could vary between 0 and 4. Based on 25 % of the responses, the interrater reliability was very high (Cohen's kappa = .91).

Interpretive ToM (adapted from Pillow, 1991; Pillow & Weed, 1995)

We adapted 4 stories from Pillow (1991) and Pillow and Weed (1995). These stories were simplified, compared with the one of Pillow (1991)'s, in order to ensure comprehension (number of characters with biased beliefs, fewer questions). The stories had one character and an actor. The character had two biased beliefs about the actor (e.g., "*Dan thinks Sergiu likes to share toys with other kids. And Dan thinks sometimes Sergiu doesn't listen to what the teachers tell them to do*"), one of which was relevant for the situation. The actor engages in an action, that remains ambiguous to the character, but not to the child ("*While he was alone in the classroom, Sergiu saw the rabbit jump out of its cage. Sergiu picked the rabbit up. Dan came into the classroom and saw Sergiu holding the rabbit in front of the cage. Dan didn't see the rabbit jump out of the cage.*"). We intersected two conditions, *nature of ambiguity and contrasting valences,* following the structure of the stories used in Experiment 2 in Pillow and Weed (1995).

Firstly, the nature of the *ambiguous action* could be of one of two types: either the action had an ambiguous intention (intended or accidental) or the identity of the action was ambiguous (action identification condition). We had two stories in each of these two conditions. Secondly, the character's *relevant biased belief* and disambiguating information were either of contradicting valences (1 story relevant positive bias, negative reality; 1 story relevant negative bias, positive reality) or not (1 story relevant positive bias, positive reality; 1 story relevant negative bias, negative reality; see Appendix A).

The experimenter asked a bias memory question ("What does Dan think about Sergiu? What more does he think about Sergiu?"), an event memory question ("What did Sergiu do?"), an access to knowledge question ("Did Dan see what happened in the classroom?"), and an interpretation question ("What does Dan think Sergiu is doing? Does Dan think that Sergiu is taking the rabbit out of its cage or does Dan think that Sergiu is putting the rabbit back in its cage?"). If the children did not correctly answer one of the memory questions, the story was read again. The order of choices in the last question was counterbalanced. The stories were presented in a random order. The characters were female in half of the stories in each condition and male in the other half.

The interpretation question targeted the character's interpretation of the actor's action, and a correct answer would require a consideration of the character's prior experience (biased belief) with the actor. If the child answered

correctly to all of the questions, the story was scored with 1, hence the total score varied between 0 and 4. Based on 25 % of the responses, the interrater reliability was very high (Cohen's kappa = .92).

We calculated the sum of the three ToM tasks and used it in the subsequent analysis, following Austin and colab. (2014) procedure.

Design and Analytical Strategy

Firstly, the descriptive statistics of each outcome was examined. In order to deal with missing data we have used E - M (expectation maximum likelihood) approach. This approach is more robust than the imputations methods and has good statistical properties (for more informations see Jakobsen et al., 2017). The normality of each distribution was examined in order to choose between the parametrical or non-parametrical tests. Secondly, we applied the correlation and regression analysis in order to test for our hypothesis regarding the relations between our constructs.

Results

Descriptive data for the three ToM tasks, Total ToM, EF, anxiety symptoms and comprehension are provided in Table 1. Regarding the demographic data, we obtained a positive correlation between Total ToM and Age, $r_s(120) = .24$, $p = .006$, as well as Income, $r_s(120) = .24$, $p = .006$ (see Table 2). This means that children performed better on the ToM tasks, they were also older and their parents had a higher financial status.

Table 1. Descriptive statistics for the main variables

Variable	*N*	*Range*	*Min*	*Max*	*M*	*SD*
Comprehension	120	39	14	53	35.76	6.58
Anxiety and depression symptoms						
Anxiety Symptoms	120	53	2	55	16.6	9.75
Internalizing Symptoms	120	59	2	61	19.98	11.63
IQ tests						
Working Memory	120	4.83	1.17	6	3.30	.77
Inhibition Efficiency	120	3.98	0	3.98	2.17	.75
Switching Efficiency	120	4.72	0	4.72	2.55	.83
Faux-pas task	120	4	0	4	2.73	1.12
Strange Stories task	120	6	2	8	5.41	1.59
Interpretive ToM	120	4	0	4	2.35	.81
Total ToM	120	11	4	15	10.49	2.25

Note: Anxiety and Internalizing Scores are outcomes of the Revised Child Anxiety and Depression questionnaire completed by children and their parents. Inhibition and Switching Efficiency are two subscales from the Processing Speed Index.

We failed to support the first hypothesis, as the three ToM tasks did not correlate with each other. However, when we looked at the valence consistency condition separately, we found a positive correlation between valence consistent stories and faux-pas performance, $r_s(120) = .25$, $p = .005$, as well as between performance on valence inconsistent stories and switching performance, $r_s(120) = .19$, $p = .033$. This means that as children performance on correctly inferring the character's interpretation based on their relevant bias, in stories where the valence was consistent, their performance on switching between rules while doing a task increased as well. Also, in stories where the character's irrelevant bias wasn't of the same valence as the reality information, as children correctly inferred the character's interpretation based on their relevant bias, their performance on understanding transgressions of social norms increased. However, the correlations became insignificant after controlling for Age.

Regarding the relation between EF and socio-cognitive abilities, we obtained positive correlations between Total ToM and Comprehension, $r_s(120) = .28$, $p = .002$, as well as WM, $r_s(120) = .24$, $p = .007$. This means that as children answered with more correct responses on the ToM tests, they offered more correct responses regarding general principles and knowledge in various social situations, as well. They could also remember more words while doing another mental operation.

We also found significant correlations between Inhibition/ Switching Efficiency, and Comprehension, $r_s(120) = -.27$, $p = .003$, and $r_s(120) = -.26$, $p = .003$. This means that as children performed better on inhibiting unnecessary mental content, and switching between rules, they also offered more correct responses on the comprehension task. Also, as their age increased, their performance on the inhibition and switching task increased as well (see Table 2). Regarding the relation with ToM tasks, we found a significant correlation between Inhibition/Switching Efficiency and Strange Stories performance, $r_s(120) = -.19$, $p = .037$, and $r_s(120) = -.18$, $p = .041$. This means that as children performed better on inhibiting unnecessary mental content, and switching between rules, they performed better in understanding that a character's interpretation of a message influence their reaction.

In order to determine the specific effect of EF on Total ToM, while controlling for Age and Income, we ran a series of robust hierarchical regressions using the bootstrap method, which is recommended when the dependent variables violate the assumption of normality. We included as the dependent variable the Total ToM score. The control variables were Age and Income. In the second step, we included WM and Comprehension. The first model was significant, and explained 10% of the variance, $R^2 = .10$, $F(2, 117) = 6.980$, $p < .001$.

The second model was also significant, and predicted 14,8% of the variance, R^2 = .04, $F(4, 115) = 4.975$, $p < .001$. In the second model, only Comprehension remained significant, β = .074, p = .042, *CI* [.002; .146] (see Table 3).

Table 2. Correlations between Total ToM, RCADS, and EF measures

Variable	1	2	3	4	5	6	7	8	9
1. Age									
2. Income	.13								
3. Comprehension	.51**	.15							
4. Anxiety Symptoms	-.04	-.12	.98**						
5. Internalizing Symptoms	-.01	-.12	-.19*	.01					
6. Inhibition Efficiency	-.52**	-.18*	-.27**	.04	.03				
7. Switching Efficiency	-.52**	-.11	-.26**	.06	.04	.87**			
8. Working Memory	.33**	.02	-.01	.46**	-.16	-.29**	-.18*		
9. Total ToM	.24**	.24**	.28**	.24	.00	-.00	-.01	.24**	

Note: RCADS= Revised Child Anxiety and Depression Subscale for anxiety symptoms. Significance level: *p<.05. **p<.01.

Table 3. Hierarchical Regression Analysis for Variables Predicting Total ToM

Variable	*B*	*SE B*	β	*p*	95% CI
Step 1					
Age	.51	.20	.23	.01	[.13, .90]
Income	.49	.28	.18	.07	[.01, 1.12]
Step 2					
Age	.51	.24	.12	.27	[-.25, .74]
Income	.49	.27	.16	.11	[-.04, 1.04]
WM	.12	.24	.04	.58	[-.37, .61]
Comprehension	.07	.03	.21	.04	[.00, .14]

Discussion

The literature on ToM beyond preschool years is still inconclusive. We aimed to address these shortcomings by investigating the relation between advanced ToM tasks, as well as the role played by cognitive skills in the expression of advanced ToM in middle childhood, for the first time in literature reunited in a unitary design. It is still unclear which EF is relevant for ToM in late childhood, and in what way.

We did not find any correlations between the ToM tasks, as well as between the interpretive ToM task and EF. This is not necessarily surprising, as ToM has been argued to be a non-coherent construct, with mixed results

across studies, especially in those conducted with middle childhood populations (Meinhardt-Injac et al., 2020; Schaafsma et al., 2015). Different tasks may tap different aspects of socio-cognitive reasoning and understanding, each following different developmental paths, and relying on different aspects of cognitive processes (Osterhaus et al., 2016). However, when we looked separately at the interpretive ToM conditions pertaining to the contrasting bias-reality valence, we found a positive correlation between interpretive ToM valence inconsistency condition and faux-pas understanding, and between interpretive ToM valence consistency condition and Switching Index, although they were insignificant once the age was taken into account.

As Schaafsma et al. (2015) explained, ToM reflects a variety of sub-skills, and it would paint a more realistic view if we deconstructed it into simpler processes. We followed their suggestions with the intention to explain our results. In our interpretive ToM stories, to infer the perspective of the observer, the child considers two opposite biases towards the actor (Behbahani et al., 2012). The child must consider the content of the biases in order to determine which one is relevant for the presented situation (Pillow & Weed, 1995). In order to answer correctly, they must make use of more than a valence-matching strategy between their biases and the available information. They must imagine two possible scenarios, based on these biases, and contrast them with the details of story, in order to infer the correct interpretation. Moreso, as the biases are not at the opposites in the same domain, but in different ones ("*Dan thinks Sergiu likes to share toys with other kids. And Dan thinks sometimes Sergiu doesn't listen to what the teachers tells them to do*."). It seems that the child had to make use of their imagination more than in the other ToM tasks, given the details, hence, this ability may be a confound factor in this study.

With regards to the role EF have in ToM variance, we have found WM to be a predictor of Total ToM. These results are in line with other studies that found EF to be associated with ToM at 6-11 years, as well at 7-12 years. More specifically, WM was a longitudinal predictor of a Total ToM score (second order false belief, Strange Stories task, and extended ToM scale; Austin et al., 2014). The lack of associations between Total ToM and Inhibition, Switching and Comprehension, are in line with other studies that did not find associations between EF (WM, shifting, interference control, reading comprehension) and ToM (Strange Stories task) during school years (Bianco et al., 2019; Lecce et al., 2017). These results emphasize the necessity to asses each EF subcomponent individually when considering its role in ToM expression or development. EF, as ToM, is considered an umbrella for a structure of processes, with a diversity that heightens across development (Shing et al., 2010). The relationship in literature between EF, language and advanced ToM is inconclusive, and varies greatly as a function of task used or the subprocess measured (Ahmed & Miller, 2011; Weimer et al., 2021).

A final cautionary note relates to the specifics of administering the ToM tasks in an online format – which might affect the children's responses and their interrelationships with EF. For example, in another online study, using an adult sample, the computerized Strange Stories task and Reading in the Eyes Task did not correlate, aligning with the idea that ToM should not be treated as a single construct (Navarro, 2021).

Conclusions

Our current study significantly contribute to the existing literature by considering a broader palette of ToM abilities in middle childhood. We used, for the first time in literature, a modified ToMi task, in relation with other well-established advanced ToM tasks. This is the first study to investigate together the three ToM abilities: interpretive ToM, Strange Stories and Faux-pas understanding. We are also looking at how inhibition, shifting, WM and comprehension interact with ToM. We found fewer significant correlation than we expected, and this could be due to the online task administration or to the complexity of these multifaceted constructs during middle childhood.

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Appendix A

Positive relevant bias, positive reality

Vlad thinks that Radu always keeps his things neat and clean. And Vlad thinks that Radu is mean to the other kids. One day, when Vlad was outside during the recess, another kid from the class spilled juice and cookies all over the table. Radu said "I will clean the mess". In that moment, Vlad came back in the classroom and saw Radu above the table, and the juice and cookies spiled all over the table. Vlad didn't see Radu spill the juice and cookies.

Negative relevant bias, negative reality

Sara thinks that Liana always listens to what the teachers tells them to do, And Sara thinks that Liana doesn't like to share her stuff with other children. One day, Liana brought a toy to the school. After a while, another girl came and took Liana's toy and started to play with it, without her permission. When Sara was outside during the recess, Liana went to that girl's desk and pushed her pencil case on the ground. Then Sara entered the classroom and saw Liana near the desk and the pencil case falling. Sara did not see Liana pushing the pencil case.

Positive relevant bias, negative reality

Iulia thinks that Andra wants to be liked by all the other kids. And Iulia thinks Andra always makes things messy and dirty. One day when Iulia was outside, Andra threw another girl's toy airplane on the floor and broke it. Then Iulia came inside, and saw Andra and the airplane on the ground. The airplane was broken. Iulia did not see Andra breaking the airplane.

Negative bias, positive reality

Dan thinks Sergiu likes to share his things with the other kids. And Dan thinks Sergiu sometimes do not listen to what the teacher is telling them to do. One day the teacher brought a rabbit to school. The teacher told the children not to take the rabbit out of its cage. During recess, all of the children went outside except Sergiu. Sergiu stayed inside. While he was alone in the classroom, Sergiu saw the rabbit jump out of its cage. Sergiu picked the rabbit up. Dan came into the classroom and saw Sergiu holding the rabbit in front of the cage. Dan did not see the rabbit jump out of the cage.

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VOLUNTEERING IN ROMANIA: A CASE STUDY THAT CAN INFORM GLOBAL VOLUNTEERISM

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ABSTRACT. There are many theories that explain why humans display prosocial behaviors towards their fellows. Such prosocial behaviors manifest differently with respect to the culture where they occur. Over time, some prosocial behaviors have been formalized into volunteer work, which often happens in an association or a non-profit organization. In this qualitative research, we seek to grasp volunteering in its developmental phase, and present how volunteers, volunteers coordinators, and human resources experts conceptualize volunteering. We used a semi-structured interview guide to question 15 volunteers, 10 volunteers' coordinators, and 10 human resources experts. Findings indicate that volunteering is a learning opportunity, where people can develop their skills while helping others.

Keywords*: volunteer, personal development, cultural context, volunteer work*

Introduction

Volunteering and nonprofit organizations (NGOs) are important in any society in which they exist. Volunteers' work brings many benefits to the groups they work with, to the society in which they do their work, but also to the volunteers themselves. This phenomenon is growing worldwide, with more people involved in volunteering activities each year. In some parts of the world, volunteering is already a tradition (see for example, Handy et al., 2000), while in others it is a rather new activity (see for example, Voicu & Voicu, 2003). Moreover, volunteerism is greatly influenced by the context in which it occurs, the environment, as well as the time of its' manifestation. We consider that studying volunteerism in a context where it is still a developing phenomenon will clarify the factors that foster or hinder its growth, and in the following we will refer mainly to formal volunteering. While volunteerism has been actively studied in contexts where it has a longstanding tradition, we think that, at the time, the existing research methods did not permit a comprehensive description

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of volunteerism development. Studying volunteerism in a culture where it is still growing will facilitate understanding what activities are considered volunteering, what motivates volunteers, how volunteers develop while doing their service and what prevents people from volunteering. This, in turn, will help researchers, practitioners and policy makers worldwide understand how to build volunteering programs that help beneficiaries, as well as volunteers. This is why the current paper investigates volunteerism in Romania, a country where volunteering is still developing and gaining popularity, but it is not yet a tradition.

Although volunteerism has been studied more intensely in the past 30 years, little systematic work has been done to pinpoint the term "volunteer" in a more precise manner. Some authors do not define volunteering at all, as they believe it is an agreed-upon concept. Similarly, the terms "volunteering" and "volunteerism" are often used interchangeably in the literature (for example, Clary et al., 1998; Stukas et al., 2015), and this only increases the already existing difficulty in defining this construct. However, some authors explain the difference between volunteerism, which is a framework, "a discursive and structural backdrop" (Ganesh and McAllum, 2009, p. 347), and volunteering which is a "contextual activity and experience that individuals, groups, and communities may go through" (Ganesh and McAllum, 2009, p. 347). In the following, we refer to "volunteerism" as the prolonged, planned prosocial behavior (Penner, 2002), and by "volunteering" we refer to the act of giving one's resources for the benefit of others as a member of an association or an NGO. In the present endeavor, we aim to analyze volunteering in Romania, starting from the Theory of Planned Behavior (Ajzen, 1985, 1991), by highlighting the viewpoint of certain actors involved in volunteering (volunteers, volunteers' coordinators and human resources experts) regarding the benefits of volunteering for volunteers, what volunteering is in Romania and how it differs from volunteering in other countries. We argue that this analysis describes volunteerism in its' development phase, which can help all parties involved, such as volunteers, associations' management and policy makers, understand how their actions can endorse or impede volunteerism, and also guide research into observing volunteerism's (and volunteers') development course.

Volunteerism in Romania

Historically, before 1945, voluntary activities in Romania were found only in urban areas, having cultural, educational, caring, or sporting purposes. However, the fate of voluntary associations changed drastically once socialism was established. In a socialist society, there were two kinds of associations: "truly voluntary" associations, whose purpose was to oppose the state (such as religious associations or underground political circles), and the "quasivoluntary" associations, that were controlled by the state (Juknevičius & Savicka, 2003).

Moreover, Juknevičius and Savicka (2003) argue that "civil society in communist countries was too weak to serve the purpose of mobilizing citizens for spontaneous voluntary action, and the state was strong enough to restrain it" (p. 130). In former communist Romania, volunteering was associated with "patriotic work", which was mandatory, as it was in many other socialist cultures, and served the state's "common welfare". Not attending these activities was severely punished, which fostered a reluctant attitude towards volunteering (Voicu & Voicu, 2003). However, many people have been helping others, sharing their goods with neighbors, helping a relative in need, even in these severe conditions, which can be considered informal volunteering.[2] In the past 30 years, after the fall of communism, formal volunteering, as different from patriotic work, has been developing steadily in Romania, with an increase in the number of volunteering associations and NGOs, and more people volunteering every year. However, Romania, like other post-communist countries, still has lower formal volunteering rates than other European countries (3,2% Romania, 5.2% Bulgaria, 6.9% Hungary vs. 48% Norway, 40.3% Netherlands; EUROSTAT, 2015). There are several reasons for this low participation. Firstly, during the communist period, volunteerism was discouraged and the few association that remained active, were heavily controlled by the state. Therefore, although now there are many active associations and NGOs, there are still fewer than in other European countries, and so a lack of opportunity explains the low participation in volunteering. Another reason is the religious context. Romania has a Christian-Orthodox majority, which promotes a hierarchic social structure, even in informal environments. Although organizations were built around religious establishments in the past years, involvement in those associations is still lower than in countries with a strong Protestant heritage (Curtis, Grabb & Baer, 1992; Voicu & Voicu, 2003). A cross-national analysis by Salamon and Sokolowski (2003) differentiates between two social roles attributed to nonproflt and voluntary activism: service and expression. The service role refers to activities that have a use-value to society and its members (such as fulfilling people's needs or solving social problems), while the expression role refers to activities aimed at the fulfilment of participants' aesthetic, cultural or political preferences, or social bonding. They show that in the case of Romania, volunteering has primarily a service role, rather than an expression one (Salamon & Sokolowski, 2003). Dragan & Popa (2017) state that even if there are European funds available which could support voluntary initiatives, associations have difficulties accessing these funds. They also show that while many NGOs focus on social emergencies, they are thinly spread or even absent

[2] In light of recent events, we have seen that individuals have reacted more rapidly than organizations and helped Ukrainian people any way they could: donating goods (from food to blankets and sleeping bags), offering accommodation and transport. Thus, informal volunteering has great value in many circumstances and should not be overlooked.

in the environments that are most needy from a socio-economic point of view. Most associations and NGOs are found in larger cities and the typical person involved is most likely a university graduate, while in rural areas people engage in informal voluntary activities, such as donating clothes (Dragan & Popa, 2017). As such, we argue that it is important to understand what is the perspective on volunteering in Romania, how is it changing and what the differences are between volunteering in Romania and volunteering in countries where there are higher rates of volunteering. This perspective will help researchers and practitioners see what steps need to be taken in order for volunteering in Romania and other post-communist countries to develop and become more of a habit by choice, not imposed by the state as it used to be. Studying volunteering in countries where it has less formal tradition, but is still developing continuously, using modern strategies and techniques could foster understanding its boundaries, and how it differentiates from other helping or prosocial behaviors. As such, investigating volunteering through its development in a context such as the Romanian environment will lead to a clearer picture of this phenomenon. In turn, this clearer picture will untangle the substance of volunteerism, which is sometimes regarded as a self-evident, agreed upon concept.

Benefits for the volunteers

Volunteering has many benefits for the volunteers, such as increased levels of wellbeing, empathy, tolerance and social trust (Pancer & Pratt, 1999; Khasanzyanova, 2017), as well as for the society in which it manifests, such as the aid the beneficiaries get from volunteers (see, for example Stukas, Snyder & Clary, 2015). For the volunteer, volunteerism has some intangible benefits (such as, increased well-being), and some pragmatic ones (like opportunities to find jobs) (see for example, Stukas et al., 2017). Borgonovi (2008) shows that volunteers have better health, while Binder and Freytag (2013) state that volunteers have a more significant positive well-being than non-volunteers. In their qualitative study, Liszt-Rohlf, Fields, Gerholz, Seco, & Haury (2021) state that volunteering tasks vary and thus the volunteer has the opportunity to acquire different competencies, yet in volunteering, learning is often a „by-product" that is often disregarded (Fields, 2005). The volunteers they interviewed show that the benefits for themselves focus on professional growth (skills relevant to the labor market, such as leadership skills), as well as other social and process-oriented competencies (such as, communication and technical skills). The authors also asked the volunteers how the gained skilled can be used in other contexts. Thus, the volunteers reported that they improved their organizational skills, they gained diverse experience, which resulted in opening their minds and broadening their horizons, and they became more adaptable due to working in teams, dealing with conflict and teaching others (Liszt-Rohlf,

Fields, Gerholz, Seco, & Haury, 2021). Other volunteers affirm they increased their confidence in being a leader, that developed public speaking, problem solving and conflict management skills. Many of these skills can be used in other personal or professional environments (Grant, Maass, Vettern, Harrington, O'Neil, McGlaughlin, & Good, 2020). In a study by Voicu & Raiu (2018) on a small sample of student volunteers, they show that the primary benefits of engaging in voluntary activities were greater employability due to volunteering being recognised as a professional experience, better self-awareness, developing time management and resource valorisation skills, and putting theoretical knowledge to practice. The volunteers also state that volunteerism was a professional orientation source, and they recommended volunteerism to be introduced in high schools as a subject of study (Voicu & Raiu, 2018).

We argue that volunteering is a culturally saturated activity, therefore we should acknowledge what differences are culturally driven, and what differences are determined by the developmental stage of volunteerism in different countries. We start by reviewing the existing literature on volunteerism, on cultural differences in prosocial behavior and volunteering, we explain how the Theory of Planned Behavior relates to volunteerism, and then we present our research methodology, the results, and the conclusions we drew. We believe our results draw a clearer picture on what is considered volunteering in the Romanian context, how this perspective changed across time, and how this differs from volunteering in other countries.

Cultural perspectives on volunteerism

Halsall, Cook & Wankhade (2016) examined volunteering traditions from an international perspective and focused on the history and traditions of volunteering in three countries, namely, the United States, United Kingdom and China. They argue that the strong networks of voluntary associations developed alongside party networks and were helped by the activities of the state. They show that in China the state intervenes more directly in voluntary associations or NGOs, than in the USA or the UK (Halsall, Cook & Wankhade, 2016). Thus, volunteering manifests in many regions across the world, and in each context it embodies the social, cultural, political, economic, and religious norms and practices of that context (Hazeldine & Baillie Smith, 2015). For example, the Red Cross has volunteers in many countries around the world, yet their activity is slightly different depending on the context in which it manifests, and it is influenced by cultural and social norms (see for example, Hazeldine & Baillie Smith, 2015).

Cultural differences also exist regarding attitudes towards volunteering. A qualitative research conducted in Australia (Randle & Dolnicar, 2009) aimed to increase the effectiveness of marketing strategies of non-profit organizations,

by highlighting the differences in the cultural background of community members. They discovered that there are differences between these cultural groups on various factors: while the Australian and the Anglo-Celtic groups had a positive attitude towards volunteering and a strong feeling of reciprocity, the Southern European group believed volunteering is a way to support others from their own cultural background and was more restrictive regarding what activities they consider volunteering. The Southern European group was also more influenced by members of their ethnic group than the other two groups, and the groups expressed different reasons why they do not volunteer. Therefore, the authors argue that there are no "generic volunteers" and "generic volunteering tasks", and so volunteering associations should keep in mind the diversity that exists between volunteers in their efforts to attract them and keep them involved (Randle & Dolnicar, 2009).

Thus, not only do we lack an agreed upon definition of volunteering, but we also must adapt it to each particular cultural context, should researchers reach a consensus. We believe that volunteerism embodies the culture in which it manifests, and therefore research efforts should reveal such cultural particularities. This does not mean that a systematic definition is unnecessary, rather researchers should keep in mind the influence culture could have on such a definition. Perhaps we should aim for a core definition of volunteerism, with several nodes adapted to each cultural context.

Theory of planned behavior and volunteerism

The theory of planned behavior (Ajzen, 1985, 1991) arose from the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and its goal is to understand and predict human behavior. The theory of planned behavior postulates that people make rational decisions by systematically using available information. This approach assumes that the immediate antecedent of a behavior is the person's intention to perform that behavior. Moreover, intentions are a function of three separate factors: 1) the person's attitude towards performing the behavior, which can be positive or negative; 2) the subjective norm, which is the perceived social pressure to perform or not perform said behavior; and 3) the perceived behavioral control, which indicates whether the person believes the behavior is under their volitional control (Ajzen, 1988). There is empirical support for the theory of planned behavior in relation to the prediction of some prosocial behaviors, such as blood donation (Giles & Cairns, 1995), ethical behaviors (Kurland, 1995) or health behaviors such as smoking or drinking (Conner & Sparks, 1996). In addition, the theory of planned behavior has been tested in the domain of volunteerism (Warburton & Terry, 2000; White & Greenslade, 2004; Randle & Dolnicar 2009).

In this study, we use the theory of planned behavior (Ajzen, 1988) because it offers an appropriate framework which guided our explorative work. We used

this approach because it has been used before in studying volunteerism, even in studying the impact of culture on volunteering (Randle & Dolnicar 2009). Using the theory of planned behavior, Randle and Dolnicar (2009) showed how different cultures have different attitudes towards volunteering, but also different social norms regarding this behavior. For example, Randle and Dolnicar (2009) show that while the Australian and the Anglo-Celtic groups had a positive attitude towards volunteerism, in the Southern European group the attitudes varied, and volunteering was seen as a way to support their own community. Moreover, regarding social norms, the three cultural groups display different perceptions on the influence level, with the Southern European group showing the greatest influence of others upon one's decision to volunteer, followed by the Australian group, and the Anglo-Celtic group showing the lowest influence. Lastly, the perceived behavioral control varied as well: the Southern European group showed less control than the Anglo-Celtic group, while the Australian group displayed the greatest control (Randle & Dolnicar, 2009). Moreover, the theory of planned behavior includes the benefits and costs of volunteering, along with control factors within the decision-making model (Greenslade & White, 2004) and therefore, we believe it is a suitable structure in our attempt to understand what volunteering is in Romania.

Our aim is to operationalize volunteering in the Romanian context, from volunteers', volunteers' coordinators', and human resources experts' point of view. Thus, we sought to answer the following questions: 1. What does the typical Romanian volunteer look like?; 2. What benefits do volunteers have from volunteering in Romania?; 3. What are the differences between volunteering in Romania and volunteering in other Western and Eastern countries? By answering these questions, we believe we will learn more about what supports and what hinders volunteerism's development, and how volunteers grow while doing their service as well.

Methodology and sampling

Design

We used a qualitative design for the current research because there is little information about volunteering in Romania. As such, this will be a case study on volunteerism in Romania, based on the Theory of Planned Behavior (Ajzen, 1985, 1991). In this regard, we developed a semi-structured interview guide, adapted from the one used by Randle and Dolnicar (2009), which follows the structure of the Theory of Planned Behavior (Ajzen, 1985, 1991). Afterwards, we transcribed the interviews and then we analyzed them, using a two-wave coding method.

Participants

Fieldwork occurred between April 2019 and February 2020 in Cluj-Napoca, Romania. The sample for this study comprised three main groups: a) volunteers, b) volunteers' coordinators, and c) human resources experts. In total, we interviewed 35 participants individually:15 volunteers, 10 volunteers' coordinators, and 10 human resources experts. The sample was a convenience one, and we used the snowball sampling method: the first participants were recruited from one of the author's personal and professional networks, and afterwards they were asked for additional referrals. Most of the volunteers were students, aged between 18 and 35. Their volunteering experience was quite heterogeneous: from church organizations and associations working with hospitalized children, to sports events and students organizations. One of the volunteers had been volunteering for about 4 months, while the others had been volunteering for over 2 years at the time of the interview. The volunteers' coordinators were aged between 20 and approximately 34. Most of them started as volunteers in the association where they were coordinating volunteers at the time of the interview. Some of the coordinators were volunteering as coordinators, while others were working full-time in the association. As in the case of the volunteers, they coordinated other volunteers in diverse areas: preventing addictions, sport events, working with children who suffer from cancer, abused women and others. The human resources experts were aged between 23 and approximately 32 years. They were working in multinational corporations, IT companies, and recruitment agencies at the time of the interview. Although it was not an inclusion criterion, all participants had volunteered or were still volunteering at the time of the interview. Seven participants have volunteered abroad (3 volunteers, 2 human resources experts, and 2 volunteers' coordinators) and five participants worked with foreign volunteers (3 human resources experts and 2 coordinators).

Instruments

For the interviews, we developed a semi-structured interview guide based on the one used by Randle & Dolnicar (2009). The original interview guide developed by Randle & Dolnicar (2009) had 9 sections: four sections focus on general aspects of volunteering (such as image of certain organizations or past volunteering behavior), three sections focus on the Theory of Planned Behavior (Behavioral Beliefs/Motivations/Attitudes, Normative Beliefs, and Control Beliefs), one focused on a specific volunteer group, and one focused on personal aspects (time spent in Australia).

We adapted the interview guide to match the Romanian culture and environment (for example, we changed the names of the organizations mentioned

in the Organizations Image section to match NGO's that are active in Romania). We also added a few questions regarding volunteering in Romania or other specific aspects for each group we interviewed, because we wanted to focus on volunteering behavior in the Romanian cultural environment. Therefore, we asked all participants a few questions about volunteering in Romania. Specifically, how they would define volunteering, what differences they consider that exist between volunteering in Romania and in other countries, and how volunteering will develop in Romania. To compare volunteering in Romania to volunteering in other countries we only took into consideration responses from participants who volunteered abroad or worked with international volunteers. We asked what the benefits of volunteering for the volunteer are and how the participants think volunteers change throughout their service. Lastly, we asked the human resources group a few questions about the importance of volunteering in the workplace.

Procedure

One of the authors interviewed each participant individually. It was important that the participants were comfortable, so the interviews occurred at an agreed upon location: at a location proposed either by the researcher, or at a location proposed by the interviewee (usually at their workplace). The interviews lasted between 30 and 90 minutes, depending on the interviewee's answers. All interviews we transcribed verbatim by the researchers and trained research assistants.

Analysis

The transcribed interviews were analyzed using a two-wave coding method. We categorized the data in an iterative process, as suggested by Miles, Huberman & Saldana (2015). First, we coded each interview individually, and then we clustered the codes into themes. Because the interview guide was constructed on the theory of planned behavior, the results are structured on the three main constructs of said theory: attitude, social norms, and perceived behavioral control. Separately, we describe the additional findings from the other questions we introduced in the interview guide.

Findings and discussion

We will start the results section by explaining the results regarding the attitudes, the social norms and the perceived behavioral control from the perspective of all of the three groups. Then we will focus on how the volunteers, volunteers coordinators, and the human resources experts conceptualize volunteerism, from their personal experiences with this behavior, on their

perspective on the development of volunteering and the personal benefits of the volunteers. Separately, we will present the differences from other countries regarding volunteering, described by participants who either volunteered in other countries or worked with international volunteers. Lastly, we will explain the importance of volunteering at the workplace, from the perspective of human resources experts.

Attitude

When asked about the typical volunteer, the volunteers, the volunteers' coordinators and the HR experts indicated that the typical volunteer has certain attitudes, such as proactivity, openness, and involvement, and they are also people- and community-oriented. They all agreed that the typical volunteer already has some soft skills developed: communication, time management, problem solving skills, empathy, and perspective taking, responsibility, altruism, adaptability. Nonetheless, they suggested that the typical volunteer is also aware of the problems of the society they live in. We did not give any indications about who is a typical volunteer, each participant answered based on their own image of the volunteer prototype.

> "[Typical volunteers] are actively looking for a way to enter society and do something more. They are very empathetic, they understand the needs of others and can adapt to those needs. At the same time, they are responsible people, who realize that they have been exposed to a certain vulnerable group. When I think of volunteering, I think of getting in touch with people, not necessarily with animals or the environment in general and that is why I believe that they are responsible people, who understand the emotional charge and the fact that this comes with a lot of proactivity from them." (D. D., female human resources expert, aged 32-37)
> "[The typical volunteer is] a person with good communication skills, with many ideas, a very flexible person, who can adapt to the situation and the people and who can interact with different categories of people." (A. B., female human resources expert, aged 27-32)

In terms of motivation, the participants identified a few reasons why people decide to involve in volunteering: the need for belonging, to express their values and find a purpose ("make a difference"), to increase their wellbeing, to develop some skills, gain work experience, or simply spend their spare time. Moreover, they associated their need for connection with being with a group of people with whom they share values or they work together for the same purpose. They also mentioned that some people volunteer because others modeled this behavior. The human resources experts added that a reason to volunteer would be expanding one's social network and that some people start volunteering to acquire professional experience.

> "[When you volunteer] you gain a *family*, some friends, who end up being your friends not only while working on the project, but also outside the NGO." (C. O., female volunteer, aged 27-32)
> "I think it starts with a need of theirs. From a need to be in a group, to be integrated, to share what they know, to spend their free time, to feel useful. Others volunteer because they learn from that environment; they want to grow, to develop in general, but also on some specific tasks and abilities." (V. B., female volunteers' coordinator, aged 30-35)
> "I think that people who volunteer want to see what they would like from a professional point of view, they explore some options because it is a somewhat safe environment." (A. C., female human resources expert, aged 27-32)

Lastly, the participants described the typical non-volunteer as being un- or misinformed about volunteering and volunteering opportunities, comfortable with their routine or focusing on other priorities, such as work or family life. Furthermore, the volunteers argued that a typical non-volunteer avoids volunteering because they underestimate their resources or skills, they lack the time needed, they are afraid or they simply do not know how and where they can volunteer. In addition, the volunteers' coordinators also highlight the importance of behavioral modeling that the typical non-volunteer may lack. The human resources experts stated that the typical non-volunteer focuses on other priorities in their life, which is a normative aspect of life, regardless of one's age.

> "They may be misinformed, maybe they have never had contact with people who are volunteers and then they do not know what volunteering is." (C. O., female volunteer, aged 27-32)
> "Maybe they don't want to [volunteer] or maybe they were not given such opportunities. Maybe the person's social circle is not involved in such things and thus the person is not involved either." (B. S., female volunteers' coordinator, aged 25-30)

The Theory of Planned Behavior (Ajzen, 1985, 1991) states that the first factor that influences intention to perform a behavior is the attitude towards that behavior. Our participants display a positive attitude towards volunteerism, explaining that the typical volunteer has some personal resources (such as interpersonal or problem-solving skills among others) that will support their decision to start or continue volunteering. The Theory of Planned Behavior (Ajzen, 1985, 1991) mentions that the performance of said behavior "depends at least to some degree on non-motivational factors as availability of requisite opportunities and resources" (Ajzen, 1991, p.182). Thus, our participant explained that non-volunteers lack these non-motivational factors, as they do not have the necessary information about volunteering opportunities, or they do not have sufficient time to dedicate to volunteering.

Social norm

The participants we interviewed generally believed that the opinion of significant others (family and friends) would have a moderate influence on their decision to volunteer. While some volunteers' parents and friends are involved and supportive, some of the volunteers' parents and friends were more skeptical. Because they encounter these opposite attitudes, some volunteers tried to explain to and show their parents or friends what volunteering is, in an attempt to change their views. The volunteers' coordinators further explained that the way the volunteers explain their work to their families and friends is essential, and could influence their families' and their friends' opinion.

> "[My father] did not care before. Now he is a little more proud, but because I took him with me, we made packages for children, he came to the association and I showed him << we receive the women here, we do this here>> ... and he is more proud now." (S. T. female volunteer, aged 18-35)
>
> "[My family and friends] have a positive attitude towards my work as a volunteer, I believe because I present it in a manner that shows I enjoy what I do." (B. T., male volunteers' coordinator, aged 30-35)

On the other hand, the human resources experts' opinion was slightly different. A few experts said that the family's opinion is a very important factor in the volunteer's decision to get involved, especially if they are of younger age.

> "I think [the family's opinion would matter] quite a lot. For example, the parents' opinion. They might say <<You will not have time for school>> […] On the other hand, they might say <<Well done, you realize how difficult it is for others, you put yourself in their shoes, you help them, you understand them better, you spend your time doing something useful, you don't expose yourself to certain harmful environments>>." (D. D., female human resources expert, aged 32-37)

Additionally, our participants stated that behavioral modeling is important for volunteering. On the one hand, volunteers describe their volunteering experiences to their family and friends, which will be a learning experience for the latter. On the other hand, most volunteers in the group said that one of the main reasons why they involved in volunteering is the fact that someone important to them volunteers or used to volunteer. As we stated above, all human resources experts have volunteered at some point in their lives. While some of them explained how important behavioral modeling is for volunteering, others described some neutral attitudes they faced.

> "[your parents] are satisfied that you arrive in the evening and you tell them about all kinds of events and all kinds of situations, from the simplest to the worst and they learn from your experience." (I. C., female volunteer, aged 22-27)
> "My great-grandmother, who did not have many financial resources, inspired me. She did not have many resources for herself either, I remember that, as a child, and visiting her, somehow she always had time to participate in community activities, such as preparing food for weddings or funerals. Being part of a small community in the village, everyone knew each other. She was one of the village elders and had expertise in these activities." [C. O., female volunteer, aged 18-15]

According to the Theory of Planned Behavior (Ajzen, 1985, 1991), the perceived social pressure one gets from significant others influences the likelihood to engage in a specific behavior. In this study, the participants mention that oftentimes volunteering is a modeled behavior, meaning they had a family member or a friend who volunteered and encouraged them to do so as well. At the same time, some participants faced the opposite attitude, that of being encouraged by family members to focus on other activities (usually the academic ones), rather than volunteer. In this case, many participants proceeded to volunteer despite their family's opinion. Moreover, they tried to highlight the benefits volunteering has for them, which in some cases changed the reticent attitude of the family to a more neutral or even positive one.

Perceived behavioral control

All volunteers we interviewed had been involved in volunteering for at least 6 months when the interview occurred, although this was not an inclusion criterion, as we mentioned above. Some of them have volunteered in multiple NGOs or associations, while few of them have been active in one NGO in their volunteering career. All volunteers predicted that they will continue volunteering in the same or multiple organizations. Some of the volunteers stated that they wish to have their own volunteering association.

> "I would like to show young people that they can be a very active part of other people's lives. I would like to set up my own association from scratch. This is my dream - to have my own NGO at some point. [Until then] I will continue to volunteer." (A. C., female volunteer, aged 25-30)

The volunteers' coordinators we interviewed were either still volunteering or used to volunteer. Two of them have coordinated a group of volunteers at a one-time event, while the other eight coordinators have been coordinating a group of volunteers for at least 3 month at the time of the interview. Some of them were "promoted" from volunteers to coordinators in the same association.

Most of the coordinators said that they plan to continue their volunteer work, either in the same organization or in another. Some of them stated that they do not want to volunteer in the near future, but they will work with volunteers or they will promote volunteering. Others, on the other hand, plan to have their own NGO.

> "I don't plan to volunteer soon, but I will continue to coordinate volunteers. However, I must admit that the job in a volunteer organization also requires a lot of volunteering and openness. However, whether I am employed in an NGO or not, volunteering will always be an important part of my life and I will always want to do this activity as well." (D. T., female volunteers' coordinator, aged 27-32)
> "I want to start an NGO with a friend of mine. We'd like to work on health education for children in the poor areas nearby." (C. P., female volunteers' coordinator, aged 25-30)

Similarly, the human resources experts we interviewed volunteered before or were still volunteering at the time the interview occurred. Some of them started as a way to start their career or because it was a leisure activity, sometimes spent with friends. All experts we interviewed said they were open to volunteer again, even though they do not do it regularly, they would like to help in one time or shorter time events. In addition, some of the experts already started their own association or plan to do it.

> "Coming out of college without professional experience, I realized that I would need something extra to differentiate myself from my other colleagues who graduated from college." (D. D., female human resources expert, aged 32-37)
> "We started this NGO because we had friends who suffered from cancer and we knew people who were sick, and I saw how important the way you think is during and after the treatment, and this is where it all started [...] The idea was to help other people [who suffer from cancer]." (A. R., female human resources expert, aged 32-37)
> "[...] I would like very much to start an association back in my home town, for teenagers or young adults." (A. B., female human resources expert, aged 27-32)

We asked the participants about the factors that could prevent someone from involving in volunteering. The barriers identified were twofold: some personal intrinsic factors (such as beliefs and emotions) and some extrinsic factors (such as available information and other priorities). Therefore, when pondering whether to involve in volunteering or not, one may encounter some beliefs about their skills and knowledge, specifically the lack of skills and information needed to be a volunteer. Another intrinsic obstacle may be fear. Many participants said that someone may not involve in volunteering activities

because they are afraid they will not fit in or that they will not do a good job. The lack of information about volunteering may be another impediment. Lastly, another drawback may be time management, when one has different activities that are more important or urgent. The human resources experts also mention the lack of positive examples of volunteering or not finding a suitable association as reasons to not involve in volunteering.

> "Some people won't know how to interact with people or how to work in such a big team or they don't have enough knowledge to do many things. Others do not consider that [they] could help or have expertise in that area of volunteering." (M. I., female volunteer, aged 30-35)
> "Maybe they are anxious and afraid they will make mistakes or they don't know which organization to choose or what to go for: nature, children, teenagers, the elderly… And that's a kind of impediment." (C. M., female volunteer, aged 22-27)
> "The main reason they can't volunteer is time - maybe they're busy, maybe they have certain personal problems that require time that could be given to volunteering." (S. P.., female volunteer aged 20-25)
> "Maybe they did not find the right organization, they do not identify with a group of beneficiaries. Perhaps [the potential volunteer's] friends do not volunteer and thus they prefer to go out together rather than volunteer. Maybe in [the potential volunteer's] social group volunteering is not promoted, but it is actually discouraged and that's why they don't volunteer". (I. M., female human resources expert, aged 25-30)

We also asked the participants about the things that could help one overcome the obstacles they described. Therefore, one aspect that may help reduce the difficulties we described would be having realistic expectations regarding one's time and performance. The participants also indicated that to overcome the barriers described, one should gather more information about volunteering. Perhaps the strongest factor that could help someone surmount the reasons they have not to volunteer is learning. Whether it is direct or indirect, learning was the most probable factor to encourage someone to volunteer. As such, some participants said that one should start volunteering to understand what it actually is like and see if it is a good fit. If they do not want to involve directly, one can learn from other volunteers' experience, which can also lead to their involvement. Having their friends' and family's support can also be beneficial and other factors that could help people involve in volunteering would be getting informed about volunteering opportunities and time management. Some of the human resources experts put emphasis on the role of education in involving in activities like volunteering.

> "[they should] actually try at least once to volunteer in a project that is suitable to their requirements. That is, something they know they like,

> an environment in which they feel good, that is in line with their passions." (M. M., male volunteer, aged 20-25)
> "I think they need the support of a few people at first so that they can have self-confidence and succeed." (N. H., female volunteer, aged 22-27)
> "I think it also starts from education, I mean the one received at home, but also the one from school, because I was lucky to be in schools where I had the opportunity to interact with certain associations. I think that this spirit of volunteering should be educated in school as well." (B. T., female human resources expert, aged 27-32)

According to the Theory of Planned Behavior (Ajzen, 1985, 1991), the perceived behavioral control refers to "the perceived ease or difficulty of performing the behavior, and it is assumed to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 1991, p. 188). All of the participants have volunteered at some point. Some volunteers took a bigger role in the association where they volunteered and they coordinate others, while some participants wished to have their own association. Therefore, they all show high levels of perceived behavioral control. Moreover, they mention the main intrinsic (such as personal beliefs) and extrinsic (such as lack of information) factors that can prevent someone from volunteering, as well as strategies for overcoming these barriers.

Defining volunteering

When asked about what volunteering is, the participants described volunteering as a win-win relationship, which involves the community and the volunteers as well. They also stated that volunteering is an opportunity to offer personal resources for others in need, a responsibility that requires dedication and an opportunity to experience belonging to a group. Moreover, they defined volunteering as a professional experience, but also a value expression experience. Some coordinators focused on the resources invested by the volunteers. Thus, they recognized that volunteers are a precious resource for many NGOs. The human resources experts said that it is a personal and professional development opportunity for the volunteer. It is an activity that one engages in out of free will, it is intrinsically motivated, and it occurs in an organization. They also explained that volunteering is an active process, and donating money to a certain organization is not volunteering.

> "I think it is an activity that brings mutual benefits, both for the one who receives the respective benefits from the volunteer, but also for the volunteer, because we also receive some rewards that are not necessarily material. Volunteering is a way to help society, and at the

> same time to help yourself. It is a win-win relationship." (M. M., male volunteer, aged 20-25)
> "I think it is an activity that requires a lot of time, involvement and responsibility from the volunteers. It is something that you must dedicate both body and soul to. [Volunteering] means love, acceptance, connectivity, a very close relationship with people. I think it captures people's values, which they cannot necessarily fulfill through friends, through work, through the job they have or through their studies. [It is an experience] that most clearly describes my values and who I am as a person." (A. C., female volunteer, aged 25-30)
> "For me and for the association I work at, volunteers are an extraordinary resource." (V. B., female volunteers' coordinator, aged 30-35)
> "Volunteering, from my point of view, is any activity that you carry out in an organization, so it must be a somewhat structured entity. When you donate a sum of money, I do not really see that as volunteering." (M. P., female human resources expert, aged 27-32)

Thus, the participants see volunteering as giving one's resources without expecting anything in return, yet it is an activity that has benefits for the volunteers, for the association and its beneficiaries. Volunteering is a structured activity that occurs in an association or an NGO, and it is different from donating goods or money.

Future development

We also asked the participants to describe how they expect volunteering to develop in Romania in the near future. They stated that volunteering will grow in terms of opportunities, the number of people who volunteer and variety of the volunteers. Furthermore, the coordinators emphasize the training most volunteers will need, while some human resources experts said that the development of this phenomenon will be greater in big cities, and less pronounced smaller towns or rural areas.

> "I see more and more associations being created for different causes; I believe that more and more people will volunteer and will want to get involved in the community. And not just the student world [will volunteer], but also people who are over 30, who have a job, maybe even a family and from time to time they know that they want to do more volunteering." (M. I., female volunteer, aged 30-35)

Lastly, the volunteers stated that, to develop, volunteering needs more publicity. With this positive reinforcement, volunteers predict an attitudinal change in the society.

> "Hopefully, [there will be] more positive advertising for volunteering and volunteers in general. People look for volunteering opportunities, so we probably start realizing how important it is." (I. C., female volunteer, aged 22-27)
> "I think people are starting to be more willing to [volunteer], to realize that there are some benefits for them, not just a waste of their time." (M. I., female volunteer, aged 30-35)

Our participants believe that with more advertising and publicity, volunteering will grow in Romania, and the volunteer profile will diversify: if students are more involved in volunteering at the moment, in the future employed adults and even retired adults will volunteer more often. At the same time, there will be more volunteering opportunities.

Personal benefits

We asked participants what they think the personal benefits of volunteering are and what changes do volunteers undergo while they volunteer. The participants described volunteering as a personal development experience. First of all, they identified several soft skills that develop while one volunteers, such as time management, team work, adaptability, giving and receiving feedback, leadership, perspective taking, problem solving, communication, and social skills. Moreover, volunteering is an adequate environment for self-knowledge, for making meaningful connections with other volunteers and networking. The volunteers stated that they also gained self-efficacy and self-confidence and some volunteers noticed changes in their values and some stated that they gained meaning in life. Lastly, the human resources experts said that another advantage is the professional experience volunteers gain while they volunteer, but also exploring a professional field and see if it is suitable for them.

> "I feel that my self-esteem is increasing, because before [volunteering] I felt that I had no purpose or meaning. By helping others […] I feel useful, I feel helpful." (I. N., female volunteer, aged 25-30)
> "The benefits are on the professional side, beyond the personal one. It is much easier for you to find a job when you are recommended or you have certain volunteer actions in your resume or that you were in certain associations, so you developed certain skills beyond what you did in college." (A. B., female human resources expert, aged 27-32)

Our participants describe volunteering as a safe environment, where one can try new experiences, learn new things, even make mistakes without suffering great consequences, as one would at a work place, for example. It is also a learning experience, where the volunteer develops many soft skills, and puts theory into practice, while helping others.

Volunteers in the workplace

We asked the human resources experts how much volunteering matters when they see a candidate's resume. They said that volunteering is a "big plus" especially for entry-level candidates, because it reflects the workplace discipline that volunteers have.

> "I look at volunteering for people who do not have a lot of experience and I can see what they did besides [going to classes] because it is already work experience. It disciplines you, it helps you organize, it helps you take some responsibilities, to know why you are there, it shows that you can stay in a task for several hours or that you can take on something and you do it by the deadline. And [volunteering matters for] those who are at the beginning of their careers." (D. D., female human resources expert, aged 32-37)

The human resources experts described how differently people who volunteer act at the workplace. They said that volunteers are more adaptable and they integrate more easily. Another difference is the way volunteers interact and communicate in interviews, and with other employees. Lastly, the experts explained that volunteers have their soft skills more developed than candidates who do not volunteer, and they are more proactive.

> "I think the difference is that they get into the organization's rhythm much easier, because, in the end, we are talking about some processes. They know how to deliver the relevant information, they know how to give punctual answers or information. It is like you already know the dance steps. You enter the ring, but you already know where to walk, who you dance with, than some people who don't volunteer and they need to see what others do. [The volunteering experience shows] in how they interact in interviews, they were a little more relaxed and communicative than those who did not have such activities. They answer questions based on their experience and skills. There are differences [between volunteers and nonvolunteers], I would say, in soft skills. Two people can be very good technically, so to speak, to know the job very well, but at the level of communication, negotiation, conflict situations, teamwork situations they can differ a lot and volunteering matters. Two candidates may have the same professional experience and technical know-how, but they may have very different levels in soft skills." (M. P., female human resources expert, aged 27-32)
>
> "I notice this part of involvement and initiative. The people who can come up with proposals and ideas are those who have volunteered at some point." (I. M., female human resources expert, aged 25-30)

The human resources experts we interviewed argued that they notices some differences between employees who volunteer, and those who do not. They said that even in the interviews, volunteers are more open, and after they are hired, they adapt more easily to the discipline of a workplace.

Differences from other countries

Some of the volunteers we interviewed also volunteered abroad or interacted with international volunteers, so they were able to describe the differences between volunteering in Romania and volunteering in other European countries. These volunteers said that one thing that differs by context would be the needs each society has and, as such, the NGOs and associations have different profiles, according to the contextual needs. Another difference would be the access to financial resources, that is, in other European countries the NGOs and volunteering associations have more finances that the Romanian volunteering organizations. Lastly, those who volunteered abroad mentioned a "volunteering culture" that they encountered, which led to a better organization of volunteering activities and a different societal perspective of volunteering.

> "I think that, in fact, the difference consists in the needs that the countries have. [Abroad] they have more resources, so they can do more, but unfortunately we have this lack of resources." (I. E., female volunteer, aged 25-30)
> "I think they have more tradition in volunteering and then they seem a little more organized." (M. I., female volunteer, aged 30-35)

Some of the coordinators we interviewed had the chance to work with international volunteers or they volunteered in other countries. As such, they mentioned some differences between volunteering in Romania and volunteering in other countries. The main difference would be people's involvement in such activities. Abroad, people start volunteering at younger ages and this activity is widespread. Moreover, in other countries volunteering is a habitual part of people's lives.

> "[Abroad] volunteering is appreciated and children are supported from a younger age to engage in volunteer activities than in Romania. We had a 14-year-old Canadian volunteer, and usually we do not accept such young volunteers, but she was very insistent." (D. T., female volunteers' coordinator, aged 27-32)
> "We had several series of international volunteers with whom I interacted and who thought that volunteering is very natural. It is not so easy to find such volunteers in Romania. I noticed that for Romanian volunteers it is rather a background activity, it usually comes last." (V. B., female volunteers' coordinator, aged 30-35)

Regarding the differences they noticed between volunteering in Romania and volunteering in other countries, the group of HR experts stated that the scope of volunteering is the same, but some of them highlighted cultural influence. However, a few experts stated that volunteering is the same, regardless of where it occurs.

> "The idea is the same. If we talk about volunteering, regardless of the field or the cause it supports, we follow the same principles and ideas. I think it is different concerning culture. In the sense that it is different where you are, in what country you are, no matter what you do, whether it is about volunteering, the profession, culture makes its mark. I do not think there is a big difference, from heaven to earth, but the culture is there and I think it shows." (A. C., female human resources expert, aged 27-32)
> "I volunteered both in Romania and abroad and I cannot say that I necessarily noticed many differences. It seemed to me that we were very well coordinated in that project [abroad], but we also worked in Romania on projects that we were well coordinated, so I do not think that's a difference." (M. R., female human resources expert, aged 27-32)

The main differences between Romania and other countries regarding volunteering are twofold: access to resources and the volunteer profile. Our participants said that, in their experience, the associations and NGOs abroad have easier access to financial resources that support their activity. At the same time, in some countries they visited, people start volunteering at younger ages, and they prioritize volunteering to other activities.

Integrating results from the case study into the broader picture of global volunteerism

In this exploratory paper, we tried to pinpoint volunteerism as a concept, from the viewpoint of three important actors involved in volunteering: volunteers, volunteers' coordinators, and human resources experts. The study focused on the profile of the typical Romanian volunteer, the benefits volunteers gain from volunteering and the differences between Romania and other countries regarding volunteering. Previous studies show that volunteerism has positive effects on the volunteer, such as higher levels of empathy, trust, tolerance, and wellbeing, as well as developing new skills and knowledge (Pancer & Pratt, 1999). These effects have been studied as consequences of volunteering that manifest at the end of one's service, not as a process. In this paper, we tried to apprehend the ongoing effects of volunteering during the volunteers' service.

Regarding attitudes, social norms, and perceived behavioral control (i.e., Theory of Planned Behavior, Ajzen, 1985, 1991), the results from the

three groups we interviewed did not differ very much. They all showed a positive attitude towards volunteering, just as the Australian and Anglo-Celtic groups in Randle & Dolnicar's study (2009). In their study, the Southern European group had a varying attitude towards volunteering, which we did not find among the groups we interviewed. Our participants suggested that the typical volunteer is already equipped with some soft skills and prosocial attitudes, yet one of their motivations for volunteering may still be skill development. The human resources experts added that a reason why people volunteer would be gaining work experience, which the other participants did not mention. This may be because of the profile of the associations where the volunteers were involved or the coordinators worked: most of them were involved in associations with humanitarian profiles (working with children who suffer from cancer, preventing addictions and bullying in schools etc.) which the volunteers did not see as work experience, but rather as giving back to the community.

The volunteers and the volunteers' coordinators believed that the opinion of significant others has a moderate influence on one's decision to volunteer, similar to the Australian group in Randle & Dolnicar's (2009) research. In their study, the authors found that only the Australian group perceived a moderate influence of the social norms on the participants' decision to volunteer, while the Anglo-Celtic group expresses a low influence, and the Southern European group reports a high influence. The volunteers and the volunteers' coordinators explained how behavioral modeling is an important factor for involving in such activities. However, many participants stated that while some family members are supportive, others are rather doubtful and they encouraged the volunteers to focus on activities related to their field of study. The last perception could be an effect of what volunteerism was in the communist period: a mandatory activity for the state, with little benefits for the volunteer. While the volunteers and the coordinators believed that if one has a strong desire to volunteer, they would do so regardless of others' opinion, the human resources experts argued that the family's opinion would influence one's decision to volunteer if they are of younger age. In this case, the experts claim that the opinion of their family surpasses one's desire to volunteer.

The participants we interviewed see a high level of perceived behavioral control regarding engaging in volunteering activities. While some volunteers expressed plans to develop their own NGOs, some coordinators said they work overtime and they see this as volunteering and some of the human resources experts declared that volunteering was a way to enter the labor market. Compared to the different ethnic groups in Randle & Dolnicar's (2009) study, our participants are more similar with the Australian group regarding perceived

behavioral control, who also declare greater control. On the other hand, the Anglo-Celtic group reported a moderate control, while the Southern European group indicated lesser control over engaging in volunteering activities, which is opposite to our results.

They also describe volunteering as an activity that has benefits for everyone involved, yet there may be some differences from other countries. Perhaps the most important results are those describing the benefits volunteers have from volunteering and the changes they undergo while doing their service. Each person we interviewed described how volunteering is a learning opportunity, an environment in which one can develop their self-knowledge, their hard and soft skills. Moreover, they mentioned that volunteering is a safe environment in which one can try new things, one can try to solve problems on their own, or propose new ideas and projects, while receiving support from their colleagues and coordinators. Therefore, in Romania, volunteering is considered an essential development opportunity, especially for students or those at the beginning of their careers.

With respect to volunteers in the workplace, the human resources experts highlighted some differences between employees who volunteered and employees who did not volunteer. They state that volunteering is sometimes a differentiation criterion when they choose a candidate in the hiring process, but they also explain the differences they observed even in the initial interviews: candidates who volunteered before are usually more relaxed, they give examples for different skills they claim to have. The experts stated that when they start working, employees who volunteered are more adaptable to the work environment, they have a certain discipline and work ethic, and they have better teamwork skills.

At the same time, some of the people we interviewed had experience with volunteering abroad. Thus, they were able to identify the differences between volunteering in Romania and volunteering in other parts of the world. It is clear that volunteering in Romania is still growing. We have not reached a tradition or a "volunteer culture" as our interviewees mention they have seen in other countries. In Romania, people still see volunteering as an activity one does in their spare time and it is easily given up when something more urgent appears, at least when it comes to formal volunteering. On the other hand, informal volunteering has been taking place in Romania, even in the rural areas, as it emerges from our interviews. Because it is rather informal and not very systematic, volunteering is somewhat "hidden", and difficult to point out. However, should volunteering in Romania develop as our interviewees foresee, it may foster the development of such volunteering traditions.

We believe our results capture volunteerism in its development process, in a context where volunteerism does not have a longstanding tradition. Using a qualitative approach, our results illustrate the changing attitudes regarding volunteerism, how volunteering is often modeled by family members or friends who may have been involved in informal volunteering, and why some people chose to involve in other activities, rather that volunteer. Our results describe how the volunteers themselves develop while doing their service, from their own perspective, but also from their coordinators' and employers' point of view. This supports our previous work (authors) in which we emphasize the need to study how the volunteers improve their skills or knowledge while volunteering, skills that, as we show, they use later on at their jobs. Although our results shed light on volunteers in Romania, this light can be reflected on volunteers in other countries: volunteering is a developing phenomenon, and volunteers are improving their skills, knowledge and social networks by volunteering. Thus, these results can offer guidelines for grasping the development of global volunteerism, as well as the volunteers' personal development worldwide. Our ongoing work is studying how skills like empathy, and perspective taking are endorsed by volunteering.

Lastly, we hope our exploratory work will guide future research into investigating volunteering development. Although we identified many benefits volunteers have from volunteering, including soft skills development and increased employability, systematic work should be conducted to have rigorous data about these benefits. Similarly, future research should differentiate into profiles of volunteering associations and their volunteers. We strongly believe that one develops in any volunteering activity, yet there may be differences according to the association's profile and its' activities. However, this development may depend on the training the volunteers get. Research should also focus on investigating what kind of training different associations offer, and what is its effect on the volunteers' skills and work in that particular organization. Thus, our results can guide associations and NGOs into training their volunteers in such a way that they see their growth and continue their work over longer periods, while policy makers can promote volunteering as an activity that has benefits for the volunteer as well. In our previous endeavor (author), we argue that volunteers go through a process of personal development during their service, and stress the importance of studying this process. Nonetheless, research on volunteerism development in contexts where it is not yet as formalized will help set definite boundaries between volunteerism and other prosocial behaviors, which will lead to having a straightforward definition of this concept.

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EXPLORING THE RELIGIOSITY OF ROMANIAN EMERGING ADULTS: PSYCHOLOGICAL AND DEMOGRAPHICAL CORRELATES

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ABSTRACT. Studies examining religiosity/spirituality (R/S), gender, parental education level and psychological well-being report divergent findings, most of them being on North American populations. This research aimed to explore the relationship between R/S and psychological well-being of Romanian emerging adults. The relationship between R/S and demographical variables such as gender and parents' educational level was investigated. We explored these relationships in a sample of Romanian emerging adults, (N=468 female, 54.2%; M_{age}=24; Sd=8.68), 57.9% from theological faculties of various denominations and 42,1 % non-theological. Our findings show that R/S is higher as parents' educational level is lower, with male emerging adults being more religious than female ones and theology students being more religious than non-theology ones. Moreover, the results revealed a significant relationship between R/S and some facets of psychological well-being. Theoretical and practical implications are discussed, with emphasis on the particularities relevant for the Romanian socio-cultural context.

Key words: *religiosity, spirituality, psychological well-being, emerging adulthood, gender*

Introduction

Emerging adulthood is a topic that is often investigated under the umbrella of adolescence, or under adulthood topics. This is a relatively new developmental period, that begins at the age of 18 and ends at about the age of 29 (Arnett, Žukauskienė & Sugimura, 2014). Thus, there is a need to study diverse constructs regrading this developmental period of emerging adulthood,

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especially the ones related to the cultural and religious facets (Abo-Zena & Ahmed, 2014). Emerging adulthood (Arnett, 2000) is characterized through a series of turning points in youth's life such as moving away from home, going to college etc. Arnett (2004) points out that this developmental stage does depend on some complex cultural and demographic aspects. Such aspects would be: "longer and more widespread education" (Arnett et al., 2014, p.156), with a delay when it comes to major life decisions such as getting married, forming a family and having children (Arnett et al., 2014). By investing in their education and self-development they can continue exploring their identities in various social roles, their perspective on life, the world in general and human relationships (Arnett, 2000). Ergo, as Abo-Zena and Ahmed (2014) argue religiosity and spirituality are being contemplated during this period. The challenges of changes brought in their lives can have an impact on their well-being (Arnett, Kloep, Hendry & Tanner, 2011). According to the literature we can notice an improvement in the mental health and well-being of adolescents transitioning to emerging adulthood, but still the highest rates of depressive symptoms (Mirowsky & Ross, 1999; Vaillant, 2002) and negative affect (Charles, Reynolds & Gatz, 2001) are registered among individuals in their 20s (Arnett, 2011). This does seem to decrease past the middle of emerging adulthood, and as Arnett (2011) argues, emerging adulthood with all its facets is an area that does need future research especially considering various social, demographic (e.g., gender) cultural and contextual factors. For this reason, exploring these variables in different populations is a valuable research endeavor.

Defining religiosity and well-being

Defining religiosity has been a challenge in the research community (Giordano, Prosek & Lankford, 2014). A common model of religiosity defines it by splitting the concept into two relevant dimensions: intrinsic and extrinsic (Singh & Pooh, 2017). While extrinsic religiosity is seen as being instrumental and serving an external need (e.g., to be seen in a good light by the community), intrinsic religiosity is associated with deep commitment and personal engagement (e.g., purpose and meaning in life) (Allport, 1966; Allport & Ross, 1967). Also, another common operationalization is to separate it into two very distinct concepts: religiosity and spirituality; religion being associated with more negative connotations and spirituality with positive ones (Pargament, 1999; Hood, Hill & Spilka, 2009). While religiosity is seen through the lens of organizations, institutions, doctrine and community, spirituality is the more individualized aspect and it involves personal meaning and transcendence (Zinnbauer, Pargament, Cole, Rye, Butter, Belavich, Hipp, Scott & Kadar, 1997). It is generally

accepted now in the research community, that spirituality and religiosity are distinct concepts with no related components. It is common to define religiosity in behavioural terms such as frequency of prayers, attending various services, whereas spirituality is defined in emotional, subjective terms such as feeling a connection with the divinity (Bodling, Heneghan, Walsh, Pil Yoon & Johnstone, 2013). For the purpose of this research, we adopted the view of religiosity from previous research conducted in a similar context (see Negru-Subtirica, Tiganasu, Dezutter & Luyckx, 2016). We defined religiosity through three dimensions: (1) behavioural, (2) cognitive (i.e., the thoughts and beliefs one has in relation to the divine and sacred) and (3) emotional. The latter one fits in the former view on spirituality, because it covers the personal and subjective experience, while the first dimension, fits in the view of religiosity (i.e., behaviours that one does in search for the divine and sacred). We will use the term religiosity/spirituality (R/S), having them both covered in these three dimensions.

When it comes to defining well-being, two main perspectives are dominant in research models. On one hand, there is the *hedonic perspective* that is dubbed as *subjective well-being* and is defined as one's desire to seek pleasure, thus inviting happiness in one's life (Diener, Suh, Lucas & Smith, 1999). On the other hand, there is the *eudemonic perspective* also known as *psychological well-being* and it is characterized by self-determination, meaning in one's life, self-realization, striving to achieve one's goals and understand one's personal strengths (Ryan & Huta, 2009). In the present research, well-being is defined according to Ryff (1989, 2014) which fits in the latter understanding of well-being. Carol Ryff defines psychological well-being through six dimensions: (1) *purpose in life* (i.e., how much one feels that their life has direction, purpose and meaning), (2) *autonomy* (i.e., how much one feels that they live in accordance to their own personal convictions), (3) *personal growth* (i.e., how much one feels that they utilize their personal talents and invest in their potential), (4) *environmental mastery* (i.e., how much one feels that they can handle their life situations), (5) *positive relationships* (i.e., how much one feels that they have deep connections with significant others) and (6) *self-acceptance* (i.e., how much one knows and accepts themselves while also taking into consideration knowledge of personal limitations).

Religiosity/spirituality has been linked to psychological well-being during various developmental periods (e.g., Davis, 2005, Powers, Cramer & Grubka, 2007; Ryff,2014; Vosloo, Wissing & Temane, 2014; Lee & Zhang, 2018). In the last years a body of research has addressed links between religiosity/spirituality and well-being related to emerging adulthood (for reviews, see Bowman & Small, 2012; Singh, 2014; Hwang, Zhang, Brown,

Vasilenko & Silverstein, 2021; Upenieks & Ford-Robertson, 2022). According to WHO (2006), well-being is related to health outcomes with implications on a psychological, physical and social level. Also, the literature shows a connection between religiosity/spirituality and many psychological and other health related aspects during one's life. For example, mental health (Koening, McCullough & Larson, 2001; Rahim & Rafiq, 2015) and decreased risk behaviours such as substance abuse, alcohol abuse (Kagimu, Guwatudde, Rwabukwali, Kaye, Walakira & Ainomugisha, 2013; Meyers, Brown, Grant & Hasin, 2016), criminal behaviour etc. Despite those findings, some literature revealed an opposite view on the topic. Recent studies have found religiosity/spirituality to be linked to these high-risk behaviours (e.g., Faigin & Pargament, 2011; Stearns & Mckinney, 2017) and increased anxiety and depression (e.g., Exline, Yali & Sangerson, 2000; Winterowd, Harrist, Thomason, Worth & Carlozzi, 2005). These links have been long studied mainly on North-American populations.

Gender and religiosity/spirituality

A large portion of the research literature that set up to investigate the relationship between gender and religiosity/spirituality came to the conclusion that women tend to report higher levels of religiosity/spirituality (Desmond, Morgan & Kikuchi, 2010). When it comes to emerging adults and these concepts, there is a lack of diversity in the available research, as far as the population demographics are concerned. Most of the available research has a Christian bias (Mattis, 2014) and usually refers North-American population. Another important aspect is defining *gender* and *sex*. In this research we use the term gender, but we refer to the biological, binary construct that differentiates males and females.

A couple of differences stand out within the literature, when looking at different dimensions of religiosity. As far as behavioural religiosity is concerned, on one hand, involvement and personal investment tends to decrease earlier among male emerging adults compared to female (Arnett & Jensen, 2002; Desmond et al., 2010; Stoppa & Lefkowitz, 2010). On the other hand, other research does not show a significant difference (Sullins, 2006). Regarding the emotional dimension, it tends to be more increased among females (Sullins, 2006). However, according to Sullins' (2006) research, in some nations, males score higher than females on active religiosity (i.e., the equivalent of behavioural religiosity from our operationalization). As Mattis (2014) argues, when taking a closer look at the results, it appears that the differences are due to various aspects such as country, denomination, culture etc.

Family and religiosity/spirituality

The family plays an important role in modeling religiosity/spirituality in one's life. That does not stop after adolescence, it continues into emerging adulthood as well (Smith & Snell, 2009; Nelson, 2014). In a qualitative research on Romanian emerging adults, Negru, Haragas & Mustea (2014) have taken a closer look into the role that parents play in the development of religiosity/spirituality. According to the research, parents model religious behaviour and are also religious educators. Also, according to the The Barometer for Public Opinion (Bădescu, Comșa, Sandu & Stănculescu, 2007) 83% of Romanian adults continue to evaluate the family of origin as "the most important aspect in their life" (Negru et al., 2013, p. 384). As far as cultural aspects are concerned, in Romania children are baptized in the Orthodox Christian Church at a very early age, under one year from birth (Negru et al., 2014). Hence, family religiosity/spirituality can continue to impact one's life, as major life events are further intertwined with R/S (i.e., marriages, baptisms, funerals, requiems etc.).

Beyond parental religiousness (e.g., Myers, 2006), parenting (e.g., Hardy, White, Zhang & Ruchty, 2011; Petro, Rich, Erasmus & Roman, 2017) and the parent-child relationship (e.g., Dollaite & Marks, 2009), other factors seem to be related to increased religiosity among offspring. One factor is parents' educational level (Samani & Latifian, 2008).

The Romanian context.

While a major part of the research on the investigated topic covers North American youth, Eastern-European emerging adults are less represented in the literature. Romania is characterized by a revival in the domain of religiosity/spirituality (Negru et al., 2013). This can be seen both at a societal and individual level. At a societal level, post-communist Romania equates religiosity with national identity (Pickel, 2009, Stan & Turcescu, 2007). According to Pickel (2009) Romania is one of the most religious nations in Europe (Voicu & Constantin, 2010). While there are other countries in Europe with an increased level of religiosity, Romania appears to be the country with the highest church attendance among Orthodox European countries (Halman & Draulans, 2006; Pollack & Pickel, 2009). During the national survey, according to the National Institute of Statistics (2012), in 2011 85.04% of the population identified as Christian-Orthodox, 4,56% as Christian Roman-Catholic, 3,15% reformed, 3% neo-protestants, 0,84% Christian Greek-Catholic and 1,80% others; only 0,23% of the population declared to be atheist or without any religious affiliation. As argued above, this can be the result of children being baptized in a religious faith under the age of one.

Therefore, based on the literature review, we formulated the following objective and hypothesis for our present research.

Objective

The aim of this research is to explore the relationship between religiosity/ spirituality and psychological well-being and demographic variables (gender, parents' educational level) in a sample of Romanian emerging adults.

Hypothesis

We hypothesized that a significant positive relationship would be found between religiosity/spirituality and psychological well-being among students that are Romanian emerging adults.

We hypothesized that religiosity/spirituality would be higher among female, compared to male Romanian emerging adults.

We hypothesized that religiosity/spirituality of Romanian emerging adults would be higher when the educational level of the mother is lower.

We hypothesized that religiosity/spirituality of Romanian emerging adults would be higher when the educational level of the father is lower.

We hypothesized that religiosity/spirituality would be higher among theology students, compared to non-theology students.

METHOD

Participants

864 Romanian students (N=468 female, 54.2%; M_{age}=24; Sd=8.68) were recruited in this study. They were university students in major cities from Romania (Cluj-Napoca, Oradea, Craiova). The students were from theology (N=507, 57.9%) and non-theology (N=369) faculties. The Theology degree was: Orthodox Christian (N=268), Greek-catholic (N=86) and neo-protestant (N=153). As far as the religion of all participants is concerned, there are these categories: Orthodox Christian (N=308), Catholic Christian (N=82), Reformed Christian (N=83), Protestant Christian (N=199), monotheist such as Muslim and Hebrew (N=124) and Other, which means lack of response (N=60).

Instruments

In Table 1, we present the instruments, with details and examples of items. The questionnaires were translated from English to Romanian through the back-translation method (Brislin, 1970) by a team of four academics. The

four versions were then discussed and analyzed until a consensus was reached and the wording was finalized. The final step was to check the Romanian version, translated back to English, with the original English one.

Demographics. Demographic information included in this study is: age, gender, educational level, mother and father educational level. The data was collected together with the religiosity and psychological well-being instruments.

Religiosity/Spirituality. Adapted scales from the instrument Brief Multidimensional Measure of Religiousness and Spirituality (BMMRS, Fetzer Institute/National Institute on Aging, 1999) were used. The items were drawn from the NIA/Fetzer Short Form employed in the General Social Survey (Appendix A, Fetzer Institute/National Institute on Aging, 1999). The items that were used were chosen in order to capture three dimensions of religiosity: (1) cognitive, (2) behavioural and (3) emotional. The participants responded on a scale from 1 (never) to 8 (more than once a day) for the cognitive dimension; 1 (never) to 6 (more than once a week) for the behavioural dimension and on a scale from 1 (never) to 6 (more than once a day) for the emotional dimension. For each subscale the internal consistency ranges from .80 to .87 as reported for different dimensions of the scale

Well-being. The Psychological Well-Being Scale (Ryff, 1989) was used. This instrument includes six dimensions: Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life and Self-Acceptance. The responses on the 44-item instrument were rated on 6-point Likert scale, ranging from 1 (strong disagreement) to 6 (strong agreement). For each subscale the scores can range from 9 to 54. The scale was adapted in Romanian (Costea-Barlutiu, Balas-Baconschi & Hathazi, 2018). The internal consistency of the scale is ranging from .86 to .93 (Ryff, 1989).

Table 1. Scales, subscales and sample items for questionnaires

Instrument	Subscales and sample items
Brief Multidimensional Measure of Religiousness and Spirituality (Fetzer Institute/National Institute on Aging, 1999)	*Cognitive religiosity* (seven items): • *Values/beliefs* (two items): "*I have a strong feeling of responsibility for relieving the pain and suffering in the world."* • *Beliefs about forgiveness* (three items): "*Because of my religious beliefs I forgive the ones that hurt me."* • *Religious meaning* (two items): "*I have a feeling of mission or calling in my own life."* *Behavioural religiosity* (nine items): • *Organizational religiosity* (two items): "*I attend religious services."*

Instrument	Subscales and sample items
	• *Religious commitment* (two items): *"I take part in the activities of my religious community other than attending services."* • *Private religious practices* (five items): *"I read the Bible and other religious books."* *Emotional religiosity* – Subjective/emotional dimension of religiosity (six items): *"I feel the presence of God."*
The Psychological Well-Being Scale (Ryff, 1989)	*Autonomy* (seven items)*: "Others can very rarely convince me to do something that I do not want to do."* *Environmental Mastery* (eight items)*: "Even though my life is busy, I have the satisfaction of keeping up with everything."* *Personal Growth* (eight items): *"In my opinion, people can grow and evolve at any age."* *Positive Relations with Others* (seven items): *"Most people consider me as a loving and affectionate person."* *Purpose in Life* (seven items): *"I am satisfied with what I have accomplished in life."* *Self-Acceptance* (seven items): *"Even though my past has had many ups and downs, I would not wish to change it."*

Procedure

The participation was voluntary and no incentives were given for the involvement in the study. The questionnaires were distributed on-site at the end of classes and the students were asked to complete the consent form and research measures in pen and paper. The questionnaires were collected and introduced in a database.

RESULTS

A Pearson correlation coefficient was computed to assess the relationship between the three dimension of religiosity (behavioural, cognitive and emotional) and psychological well-being formulated in nine subscales: self-acceptance, autonomy, purpose in life, environmental mastery, personal growth and positive relations with others (see Table 2). Some correlations are significant at the .01 level (two-tailed), others are significant at the .05 level (two-tailed) and some are not. By looking at the magnitude range of Pearson's *r* we can support the following affirmations (Grove & Cipher, 2017). It was hypothesized that a positive relationship would exist between religiosity/spirituality and psychological well-being among Romanian emerging adults. This hypothesis is partially confirmed, in general the relationship is positive, but the strength of the correlation is between low and medium. We did find a lack of correlation, that is detailed below.

There was a positive and moderate correlation between cognitive religiosity and the psychological well-being subscales: (1) purpose in life, r(791) =.30, p = .001; (2) environmental mastery, r(785)= .35, p = .001. There was a positive and moderate correlation between behavioural religiosity and the psychological well-being subscale environmental mastery, r(783) = .30, p = .001. We did not find any negative correlations, but we did find a lack of correlation between behavioural religiosity and the psychological well-being subscale personal growth r(806) = .02, p = .653. For this subscale, both emotional with r(806) = .09, p = 0.021) and cognitive with r(784) = .11, p = .003 religiosity have small positive correlations. To sum up, it appears that there is a small to moderate relationship between religiosity/spirituality and psychological well-being.

It was hypothesized that religiosity would be higher among female, compared to male students. We did not succeed to confirm this hypothesis, as it can be seen by the results (see Table 3). To test the differences among means of males and females regarding R/S on all three dimensions, a t-test for independent samples was computed. There was a significant difference in the scores for males and females when it came to all three dimensions of R/S: for cognitive religiosity t(820)=10.32, p=.001; for behavioural religiosity t(817)=13.76, p=.001 and for emotional religiosity t(845)=9.17, p=.001. The results suggest that the males from our sample have an increased R/S on all three dimensions compared to the females from our sample. By looking at the magnitude range of Cohen's *d* we can support this affirmation (Cohen 1988, 1992). Specifically, when comparing male and female participants on cognitive Table 2.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1.Cognitive religiosity	.								
2.Behavioral religiosity	.85**	.							
3.Emotional religiosity	.82**	.78**	.						
4.Self-Acceptance PWB Subscale	.23**	.16**	.19**	.					
5.Autonomy PWB Subscale	.16**	.12**	.11**	.67**	.				
6.Purpose in Life PWB Subscale	.30**	.22**	.22**	.79**	.67**	.			
7.Enviromental mastery PWB Subscale	.35**	.30**	.25**	.74**	.70**	.79**	.		
8.Personal growth PWB Subscale	.11**	.02	.09*	.60**	.57**	.64**	.59**	.	
9.Positive relations with others PWB Subscale	.23**	.12**	.12**	.63**	.53**	.64**	.61**	.61**	.

Note. PWB = Psychological Well-being

** Correlation is significant at the .01 level (two-tailed).

* Correlation is significant at the .05 level (two tailed).

Correlations between religiosity/spirituality and psychological well-being t(820)=10.32, p<0.05, Cohen's d=.73, and emotional religiosity t(845)=9.17,

p<.05, Cohen's d=0.65, we can notice a moderate effect size; while for behavioral religiosity t(817)=13.76, p<0.05, Cohen's d=.98, we can notice a large effect size.

Table 3. t tests for religiosity/spirituality and gender

	Gender	N	Mean	Sd	Cohen's d
Cognitive religiosity	Female	453	3.51	.96	0.73
	Male	369	4.16	.80	
Behavioural religiosity	Female	455	2.77	.96	0.98
	Male	364	3.79	1.10	
Emotional religiosity	Female	464	3.40	1.10	0.65
	Male	383	4.04	.85	

Note. p < .05

In order to test for our next two hypothesis, we conducted two sets of multivariate analyses of variance (MANOVAs) with the last level of parental graduated education as an independent variable and the three dimensions of religiosity as dependent variables. The *F*-values with multiple pairwise combinations using LSD significant difference test, are presented in Table 4 (for mothers) and Table 5 (for fathers).

Regarding our third hypothesis, that R/S among students that are Romanian emerging adults would be higher when the mother's educational level is lower, has been confirmed. The lower the mother's educational level, the higher the offspring's R/S is, on all three dimensions. There was a statistically significant difference in offspring's R/S based on mother's educational level, F (9, 119) = 18.13, p < .0005; Wilk's Λ = 0.819, partial $\eta 2$ = .06. In Table 4 the differences can be seen for the last graduated educational level: secondary, high-school and college.

Table 4. Multivariate analysis – mothers' educational level and offspring religiosity/spirituality

		N	Mean	SD	F	η2
Cognitive Religiosity	Secondary	304	4.10	.78	26.73*	.093
	High-school	277	3.74	.94		
	College	193	3.35	1.03		
Behavioral Religiosity	Secondary	304	3.57	1.02	25.88*	.090
	High-school	277	3.16	1.13		
	College	193	2.68	1.19		
Emotional Religiosity	Secondary	304	3.76	1.01	9.17*	.034
	High-school	277	3.79	1.00		
	College	193	3.34	1.11		

Note. p < .05

Table 5. Multivariate analysis – fathers' educational level and offspring religiosity/spirituality

		N	Mean	SD	F	η2
Cognitive Religiosity	Secondary	96	4.18	.84	12.16*	.030
	High-school	457	3.79	.92		
	College	230	3.62	.97		
Behavioral Religiosity	Secondary	96	3.69	1.00	14.23*	.035
	High-school	457	3.23	1.14		
	College	230	2.96	1.17		
Emotional Religiosity	Secondary	96	4.02	.89	8.41*	.021
	High-school	457	3.65	1.03		
	College	230	3.50	1.11		

Note. $p < .05$

Our fourth explorative hypothesis, that emerging adults' R/S would be higher when the father's educational level is lower, has been confirmed. The lower the father's educational level, the higher the offspring's R/S is, on all three dimensions. There was a statistically significant difference in offspring's R/S based on father's educational level, F (6, 115) = 5.00, $p < .0005$; Wilk's Λ = 0.963, partial $\eta 2$ = .19. In Table 5 the differences can be seen for three last graduated educational level: secondary, high-school and college.

Finally, the hypothesis stating that R/S would be higher among theology students, compared to non-theology students has been confirmed. To test the differences among means of theology and non-theology students regarding R/S on all three dimensions, a t-test for independent samples was computed. On all three dimensions of R/S there was a statistically significant difference in emerging adults' R/S based on the faculty profile. There was a significant difference for: cognitive religiosity t(832)=-21.73, p=.001; for behavioural religiosity t(829)=-28.76, p=.001 and for emotional religiosity t(857)=-19.80, p=.001. By looking at the magnitude range of Cohen's d we can support this affirmation (Cohen 1988, 1992). The results are presented in table form as well (see Table 6).

Table 6. t tests for religiosity/spirituality and faculty type

	Gender	N	Mean	Sd	Cohen's d
Cognitive religiosity	Theology	473	3.51	.58	0.83
	Non-theology	361	4.16	.93	
Behavioural religiosity	Theology	468	3.95	.71	1.96
	Non-theology	363	2.31	.94	
Emotional religiosity	Theology	492	4.20	.65	1.32
	Non-theology	367	3.02	1.08	

Note. $p < .05$

DISCUSSIONS

The aim of this research was to explore the relationship between religiosity/spirituality (R/S) and psychological well-being (PWB) in a sample of Romanian emerging adults. We opted for a more complex definition and operationalization of religiosity and spirituality. A large portion of the literature addresses these concepts either by using a single dimension or more dimensions into a unitary religiosity construct (for a review of the most popular approaches see Seligman & Peterson, 2004). Our approach involved addressing three dimensions of religiosity (i.e., cognitive, behavioural and emotional), based on previous research conducted in a similar context, also on a Romanian population (see Negru-Subtirica, Tiganasu, Dezutter & Luyckx, 2016). Further, we wanted to take a closer look at psychological well-being due to its protective role in sustaining the long-term psychological and physical health among individuals (Steptoe, Deaton & Stone, 2015; Chatterjee et al., 2021).

The results of the study show that there is a relationship between R/S and some dimensions of PWB, but not all. The correlations were moderate between cognitive religiosity with the dimensions: purpose in life, environmental mastery, respectively between behavioural religiosity and environmental mastery. These results are in line with the literature that has shown that religious participation is related to increased PWB, especially on the purpose in life dimension (Ryff, 2014). Considering the participants of this study, them being (57.9 %) theology students, this result can be better understood. The subscale purpose in life is related to one feeling a sense of directedness, having an aim and objectives for living while giving meaning to the past and future (Ryff, 2014). And the subscale environmental mastery referring to having a sense of being able to manage the environment, improving one's surroundings and having control over external activities (Ryff, 2014). Looking at these two PWB dimensions and their relationship with behavioural and cognitive religiosity, while also having in mind the percentage of students from theological faculties, we can anticipate a deeper intertwining that is worth exploring in the future. When looking at the comparisons within this sample, between non-theology and theology students, we notice a significantly increased cognitive and behavioural religiosity among the latter. As Negru-Subtirica and colleagues (p. 15, 2016) argued, "the cultural context influenced theological students' personal development in a pervasive manner, marking an unbearably light and perpetual presence in their everyday lives". This implies effects on their behaviour and cognition, by having the belief that one can manage their life and also act upon said belief. Religious faith can offer them parameters that guide and structure their lives. A potential explanation may lie in the religious individual's perception of

internal control, compared to the less or non-religious peer (Pargament, 1997). Finally, this being a correlational study, we can affirm only that these dimensions of PWB might increase, especially as behavioural and cognitive religiosity increase.

The other dimensions of PWB (autonomy, personal growth, self-acceptance and positive relationships with others) had a small correlation with all three dimensions of R/S, except between behavioural religiosity and personal growth where there was none. Usually, emotional religiosity defined as spirituality is related with this facet beyond late adulthood (Wink & Dillon, 2003; Frazier, Mintz & Mobley, 2005). Hence, it might not be apparent as much, yet.

Not having a strong relationship between PWB and R/S partially contradicts the existing literature (Vosloo et al., 2009). According to Arnett (2011) emerging adulthood, is associated with lower well-being especially before the middle of it. Changes tend to appear later in life, towards the end of emerging adulthood and especially during late adulthood (Wink & Dillon, 2003; Frazier et al., 2005; Ryff, 2014; Papadopoulos & Rethymno, 2020; Hwang, Cheng, Brown & Silverstein, 2022). Considering M_{age}=24 of the participants in this research, they arguably fit in this description. Thus, a question arises whether R/S is a resource for PWB.

Also, in the present study we investigated the relationship between R/S and demographic variables such as gender and parental educational level. We did not succeed to confirm our hypothesis regarding male and female R/S. Males have a moderately increased cognitive and emotional religiosity and a largely increased behavioural religiosity. Just as Mattis (2014) argued, by taking a closer look at the results, there do seem to be differences in relation to various aspects such as culture or specific contextual characteristics. In the present study, the results might be better understood when taking a closer look at the characteristics of our sample. 57.9% (with 71.2 % of them being male) of the participants are students from various theological faculties, even though the female-male distribution in the whole sample is almost equal (54.2% female), we believe this can shed light at least in part on these results. Students from theology faculties have various obligations to attend religious services, an aspect that enters under the behavioural dimension of religiosity. In addition, this part of the sample consists of emerging adults who experience religion both as a personal and professional pursuit; these cultural and contextual characteristics might lead to increased cognitive and emotional religiosity as well. Once again, the comparisons within this sample of emerging adults, between non-theology and theology students, offer us a frame for a better understanding of these results. The within subject comparison analysis (i.e., theology and non-theology profile) emphasizes the significant differences on all R/S dimensions.

Our third and fourth hypothesis were confirmed, parents' educational level is related to increased R/S on all three dimensions. The lower the parental educational level, the higher the offspring's R/S is, on all three dimensions. This result is in line with the present literature, when it comes to the mothers (Benson, Masters & Larson, 1997; Samani & Latifian, 2008; Desmond et al., 2010). More so, we shed light on another important less studied aspect: the father's educational level and its relationship to R/S. This exploratory pursuit that we conducted added to the knowledge regarding the Romanian context, in which family is still "the most important aspect" (Negru et al., 2013, p.384) in adults' lives. The literature shows the relationship between increased R/S and parents' educational level in adolescence, especially on the behavioural dimension (e.g., service attendance; Desmond et al., 2010). The results in our present study confirm the continuity of parental influence on offspring late in life (Smith & Snell, 2009; Nelson, 2014) on more than the behavioural dimension of R/S. According to Arnett (2014), during emerging adulthood the authority of the parents decreases in general, but attachment to family continues to be relevant and important. That being so, it appears that it is of relevance to have knowledge of R/S for both parents.

Limitations and future directions

The sample for this research was comprised only of students, hence we are indeed in line with the literature of emerging adulthood (EA). EA being considered an extended adolescence with more opportunities for autonomy and exploration, while having sufficient economic and adult support (Arnett, 2000). Still, this could be a limitation when it comes to all emerging adults, especially when wishing to have a clear picture of both positive and negative trajectories during EA. Future research could include a more diverse sample, when it comes to employment and financial support.

Looking at the relationship between gender and R/S, we have opted for the biological perspective. This has its limitations; gender can be seen as society's binary differentiation between "maleness" and "femaleness". There is an increasing body of literature that raises the question of defining gender in a more nuanced way, on a spectrum (see Davidson, 2007; Vosloo et al., 2009; Mattis, 2014).

When it comes to the parent-child relationship with R/S, future studies should look at other factors such as socio-economical elements that can come hand in hand with lower parental education and contribute to increased R/S. Also, we suggest that a closer look is needed, in order to take into account, the differences that can arise when parental and offspring gender together with

their relationship quality is studied (see Negru et al., 2014; Halgunseth, Jensen, Sakuma & McHale, 2015; Stearns & Mckinney, 2017; 2019; 2020).

Finally, considering the results presented here, a longitudinal study would be useful in order to develop a better understanding in how psychological well-being tends to increase with age. Future research could include the above-mentioned parental variables, other significant relationships (e.g., clergy, friends, romantic relationships; see Nelson, 2014) and an even more nuanced sample, including emerging adults that are secularized.

To sum up, by continuing to contribute to the line of research started on Romanian emerging adults (see Nelson, 2009; Negru et al., 2014; Negru-Subtirica et al., 2016), we shed a light on the relationship between religiosity/spirituality and psychological well-being in a diverse sample of Romanian emerging adults. This diversity includes various socio-economical statuses, different regions in the country and areas of origin. Considering the demographic variables, we can have a better understanding of this particular social and cultural context. On a theoretical level, the present findings suggest the necessity to have an in-depth approach on psychological well-being and religiosity/spirituality.

In light of the relationship between religiosity/spirituality and psychological well-being, we argue that specialists that offer psychological and theological aid ought to acknowledge this and integrate it in their work. Also, the results of the present research have useful and important practical implications for colleges and universities' policies and practices. Various services that these institutions offer such as psychological, pastoral counselling and psychotherapy, can include R/S dimensions in personnel training. For the secular institutions, they can consider including pastoral counselling or specialists with training on R/S as well. Furthermore, for theological institutions, this can raise awareness in the importance of spiritually guiding emerging adults during this developmental period. Especially considering that emerging adulthood has been proposed as a "critical period" for the manifestation of resilience (Arnett, 2011). Thus, practitioners that get in contact with emerging adults can extend their evaluation to religious and spiritual aspects (e.g., beliefs, doubts, practices etc.), that show a sensitivity towards cultural and contextual aspects (Abu-Zena & Ahmed, 2014).

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THE ART OF TELLING THE TRUTH TO DECEIVE: A MATTER OF INTENT

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ABSTRACT. When deciding to deceive, individuals carefully consider others' mental states to determine how their statements will be perceived by the recipient. In highly competitive contexts, deceptive intentions might be anticipated by others, so the use of false information to deceive might not be successful. Instead, using the truth can be a better strategy, anticipating that the recipient would consider the statements to be false. The present paper discusses the literature to date investigating the ability to tell the truth to deceive others in relation to the socio-cognitive processes that support it. We examine the emerging literature by discussing the differences between simple deception, sophisticated deception, and paltering. However, the lack of sophistication regarding the use of true vs. false information to deceive restricts the ecological validity of the findings. We propose a more elaborate truth-telling for deceptive purposes approach related to socio-cognitive correlates, such as theory of mind.

Keywords: *simple deception; sophisticated deception; paltering; intention.*

A truth that's told with bad intent
Beats all the lies you can invent
William Blake, Auguries of Innocence

Despite its contended nature, deception is an essential component of our social interactions. When deciding to deceive, individuals often consider both the goals that are motivating their actions (self-directed vs. other-directed goals) and the social context that would make their statements more or less credible. Verbal deception commonly entails the use of false information that others perceive to be true (i.e., *simple deception*; Debey et al., 2015; DePaulo et al., 2003). However, there are also contexts in which the recipient can anticipate others' intent to deceive. This is especially true for highly competitive contexts,

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where people know that others may try to trick them (e.g., poker games). In such circumstances, one can provide truthful information to others who are already skeptical to mislead them (i.e., *sophisticated deception*; Sutter, 2009).

Theoretical distinctions

While simple deception was the subject of many research studies attempting to shed light on its socio-cognitive mechanisms and the most suitable ways to detect it (Debey et al., 2015; Sternglanz et al., 2019), far less is known about sophisticated deception. To further complicate matters, telling the truth to deceive was investigated under many names, making it more difficult for researchers to obtain an integrative view.

Introducing the idea of telling the truth to deceive as a distinctive deceptive strategy, Sutter (2009) named it *sophisticated deception*. It was documented that people engage in this kind of deceptive plot both in individual decision-making settings and in team decisions while playing a cheap-talk sender-receiver game. The author proposed that "telling the truth should be counted as an act of deception when the sender expects the receiver not to follow the sender's message and when the true message is sent for precisely this reason" (Sutter, 2009, pp. 56). Building on this preliminary evidence, other researchers referred to this deceptive strategy as *manipulative truths* (Kireev et al., 2017; Zheltyakova et al., 2021), *second order lying behavior* (Ding et al., 2014; Sai, Ding, et al., 2018; Sai, Wu et al., 2018), or *paltering* (Powell et al., 2020; Rogers et al., 2017; Schauer & Zeckhauser, 2007). First, according to Volz et al. (2015), sophisticated deception differs from simple deception along two dimensions: the truth value of the statements (true vs. false) and the deceiver's belief about the recipient's expectations (to be deceived vs. not to be deceived). However, in both cases, the deceiver intends to mislead the recipient. Second, sophisticated deception differs from actual truth-telling based on the deceiver's intention (to deceive vs. not to deceive) and the deceiver's belief about the recipient's expectations (to be deceived vs. not to be deceived). Taken together, sophisticated deception can be considered a hybrid behavior, given that it conveys the truth while intended to be perceived as a lie (Volz et al., 2015).

In the present context, a more conceptually ambiguous strategy is the case of *paltering,* which refers to the active use of truthful statements to convey a mistaken impression (Rogers et al., 2017). Paltering is part of the "less-than-lying" practices, designating those "morally and socially problematic statements and actions in which one or more of the elements of the true lie is missing, but one or more of the elements of authentic truth-telling is missing as well."

(Schauer & Zeckhauser, 2007, pp. 2). It is a broad concept encompassing "fudging, twisting, shading, bending, stretching, and selective reporting" (Schauer & Zeckhauser, 2007, pp. 3), often encountered in political discourses or as an active negotiation strategy (Rogers et al., 2017). Given the joint concept of using truth-telling to mislead, one might consider paltering as a synonym with sophisticated deception. Let us consider the following examples of paltering: A furniture maker receives a visit from a friend who comments on the excellent workmanship of a store-bought desk in his office, to which he responds by saying, "Thank you". Thus, he has paltered because he left the false impression that he made the desk himself (which is untrue). Alternatively, an estate agent who says they received “lots of inquiries” about a certain property or the child who answers his mom’s question “Did you finish your homework?” by saying that he wrote an essay (while the rest of the homework is still not done) are other examples of paltering, revealing its essential role in impression management or evading negative consequences, like actual lie-telling.

However, by comparing the defining elements of sophisticated deception and paltering, we can argue that there are two essential differences between them. Firstly, *the sender's belief about the receiver's expectation*. In the case of sophisticated deception, the sender predicts that the recipient is expecting to be deceived, and that the offered truthful information will be considered false. In contrast, by engaging in paltering, the sender expects the recipient to believe that the information provided is accurate. Second, the other difference between these strategies is *the sender's intention*. In sophisticated deception, the deceiver's intention is always to mislead the other, to create a false belief in one's mind, whereas in paltering, the deceptive intent is not always evident. For instance, the furniture maker could say "Thank you" with the intent to be polite, not necessary to instill a false belief in others. In line with the present arguments, Ewuoso (2019) argued that paltering should not be considered a form of deception, but rather a non-disclosure strategy with a more ambiguous intent than simple or sophisticated deception.

Socio-cognitive processes involved in sophisticated deception

The shared perspective upon deception considers it more cognitively demanding than telling the truth, the latter being viewed as the default response tendency (Farah et al., 2014; Suchotzki et al., 2015). To employ simple deception, individuals must be able to inhibit the prepotent truth responses, while keeping track of what information they provide to ensure consistency (Botvinick et al., 2001). Moreover, individuals must control their own and others' mental states, inferring what the recipient might think about their intention (Ding et

al., 2014). Again, less is known about what cognitive processes support telling the truth to deceive. In the experimental paradigms measuring sophisticated deception, telling the truth, or telling a lie entail naming an object, a hand, or choosing between two different predetermined messages that can be send to the opponent. For example, some studies asked participants to hide a coin in one of their hands and then try to prevent the opponent from guessing the location of the coin by telling the actual whereabouts of the coin when the recipient was aware of their deceptive intention (Ding et al., 2014; Sai, Ding, et al., 2018; Sai, Wu et al., 2018). In other experimental settings, participants had to indicate the true or the false graphic sign that appeared on the forehead of the opponent (circle or square; triangle or square) to prevent them from guessing the original one. The information was provided by pressing a button corresponding to the desired information, and such, the deceptive action was non-verbal (Carrion et al., 2010; Leng et al., 2019).

Attempting to unfold the socio-cognitive factors involved in adults' sophisticated deception, past research mainly focused on the neural correlates involved in the socio-cognitive processes supporting deception. Employing different types of methodologies (e.g., ERP, fMRI, or fNIRS), researchers found that if the communicator intends to deceive the recipient, telling the truth entails a similar cognitive load as false statements (Carrion et al., 2010; Kireev et al., 2017; Sip et al., 2010; Volz et al., 2015; Zheltyakova et al., 2020, 2021). For example, Carrion et al. (2010) demonstrated that a misleading intent is the key to the cognitive demand imposed by deception, irrespective of how it is carried out (using truthful or false statements). Furthermore, they found that both truthful and false claims made with a deceptive intent elicited more extensive event-related potentials (ERPs). In line with these findings, Sip et al. (2010) showed that in a zero-sum dice game, participants' decision to deceive was associated with higher activation of the frontopolar cortex, which is involved in managing competitive goals, decision making, working memory, and conflict management (Mansouri et al., 2017), key aspects of deception.

The involvement of theory of mind (ToM) in deception is a well-supported finding. Some researchers even argue that deception is ToM in action (Lee, 2013). However, concerning its contribution to sophisticated deception, the evidence so far is mixed. On the one hand, there is evidence showing that compared to plain truth-telling, deceptive intentions were associated with higher activation of the right tempo-parietal junction (rTPJ), the (pre)cuneus (CUN), and middle temporal gyrus (MTG). These regions have repeatedly been shown to contribute to people's ability to integrate socially relevant information and infer others' mental states (Decety & Grezes, 2006). Supporting these findings, Zheltyakova et al. (2020, 2021) also showed that ToM nodes (TPJ, left precuneus, left dorsomedial prefrontal cortex, and right superior temporal

sulcus) functionally interacted in association with simple and sophisticated deception. Comparing these forms of deception in experimental settings, researchers also argued that sophisticated deception is associated with a higher demand for socio-cognitive processes than simple deception, because it requires greater anticipation of others' mental states. This was highlighted by the increased functional interactions of the right TPJ with the right precuneus, primary ToM nodes (Volz et al., 2015; Zheltyakova et al., 2020).

On the other hand, Carrion et al. (2010) provided earlier evidence showing that the better the participants performed in the mentalizing task, the worse they were at deceiving their opponent using sophisticated deception. A possible explanation was that higher ToM imposed more conflict in their decision to lie, hindering their ability to do it. Other researchers argued that Carrion et al.'s finding was partly influenced by the experimental paradigm, which increased the psychological burden of deception (e.g., making eye contact with the opponent the whole time during the deceptive task; Leng et al., 2019). Additional research is needed to have a clearer image of how ToM supports sophisticated deception in adults.

Another line of research involving sophisticated deception in the adult population addressed the cognitive processes participating in its outcome evaluation. Deception is frequently driven by self-interest to increase gains, and thus, deceivers monitor the outcome of deception by engaging in reward-related processes. Reward positivity (RewP) is an ERP component that has been associated with reward processing, primarily when people evaluate their performance in terms of success or failure (Proudfit, 2015). Supporting this idea, Ding et al. (2014) found that adult participants responded to their sophisticated deception's failure (i.e., not being able to mislead the confederate by specifying to the correct location of a coin, while aiming to be perceived as incorrectly saying it) more strongly than in the case of simple deception. This is likely because truth-telling to deceive could be considered more "artful", and thus, they may care more about their failure.

Developmental precursors

Advancing to the *developmental side of deception*, it is well established that children as young as 3½ years of age can tell lies in various social situations. According to the three-stage model proposed by Talwar and Lee (2008), children as young as 2 years of age can tell primary lies, which are mainly meant to avoid punishment (Talwar & Crossman, 2011; Visu-Petra et al., 2022). Later, with their increasing cognitive maturation, children become more capable of maintaining consistency between statements to succeed in their deceptive attempts (Evans & Lee, 2011; Talwar et al., 2017).

However, most of the previous studies have examined children's simple deception, in which participants make a false statement to intentionally mislead an unsuspecting target (Lee & Imuta, 2021; Sai et al., 2021). To our knowledge, there are only three empirical studies so far investigating the emergence of sophisticated deception in children. In the first one, Sai, Ding, et al. (2018) explored 4- to 6-year-old children's ability to use truthful and untruthful claims to mislead a confederate in relation to their socio-cognitive development (e.g., second-order ToM and cognitive flexibility). Using a modified "hide-and-seek" task, researchers found that children as young as 4 can tell second order lies (correctly indicating the location of a coin to mislead the opponent). They also showed that this deceptive behavior was only related to second-order ignorance, which is a prerequisite of second-order ToM, and not to cognitive flexibility or second-order false-belief understanding. We argue that this might be because children's second-order ToM is just starting to develop in that age range, as well as their cognitive flexibility.

The other study addressing sophisticated deception in children involved school-age participants between 12-14 years of age (Leng et al., 2019). The authors were interested in the brain mechanisms of sophisticated deception, engaging children in instructed truth/lie trials vs. chosen truth/lie trials. During these trials, they measured participants' response times (RT) and event-related potentials (ERPs). Results were in line with previous research on adult samples, showing that deception intentions, rather than simply making counterfactual statements, increased the demand for cognitive control in liars. This is also confirmed by additional evidence showing that inhibitory control, verbal working memory, and shifting ability positively predicted school-aged children's sophisticated deception (Prodan & Visu-Petra, 2022).

Implications

The investigation of sophisticated deception across development has important methodological and practical implications. Further research would enrich the understanding of how intentions and social contexts may modulate interpersonal deception's neurocognitive processes. Moreover, this line of research extends the investigation of deception by highlighting that instead of classifying statements as true or false, it may be more insightful to consider the intention driving the use of true or false statements when examining the cognitive and neural markers of deception (Carrion et al., 2010; Sai, Wu et al., 2018).

From a practical standpoint, the investigation of sophisticated deception can also inform practitioners' work in applied settings. For instance, in legal interviewing settings, it is essential to acknowledge that people can also use

truthful information to deceive if they perceive that the recipient is skeptical about the veracity of their statements. This can inform interviewers on their best practices regarding rapport building and how their attitude towards the interviewee can impact the quality of the information obtained. On the other hand, if we think about children's demonstrated ability to use sophisticated deception for personal gain (Leng et al., 2019), the ecological investigation of this type of deception can shed light on promising ways to facilitate education. For example, moral education can also focus on teaching children how to identify the intentions of others and not just focus on their behaviors (Sai, Ding, et al., 2018).

Limitations of the past research

In real-life situations, telling the truth often involves elaborate descriptions of a situation, providing specific details that would inform our recipient about different aspects of the discussed topic. There are few occasions in which the decision between telling the truth and lie-telling involves a simple choice between naming a straightforward thing (e.g., indicating the right or the left hand), such as the one presented in most experimental paradigms investigating sophisticated deception. Moreover, we are often questioned by others on our statements, which requires us to make additional arguments to convince the recipient.

Reviewing the literature to date on sophisticated deception, we observe a big difference in how truth-telling and lie-telling were tested. For example, past developmental research distinguished different deception sophistication levels employed using counterfactual statements, ranging from simple denials of things to elaborate false statements meant to ensure consistency (Evans & Lee, 2011). In contrast with this refined perspective on simple deception, all the studies investigating sophisticated deception are based on a more rudimentary usage of the truth/lie. In the tasks described above, the truth entailed a concise claim that was carried out sometimes by simply pressing a button, pointing in a direction, or telling a simple truth. For example, Sutter (2009) instructed participants to choose between two response options to maximize their monetary gains. More specifically, participants had to send a message to an opponent regarding the monetary consequences of two different options: Message A: "Option A will earn you more money than Option B." or Message B: "Option B will earn you more money than Option A.". Participants had to send one of the messages to the other to maximize their own gains depending on their expectation that the other will follow their recommendation. As such, to use sophisticated deception, people had to make a simple choice between two predetermined messages without needing to give further arguments to convince the others, as would happen in real life.

We argue that this basic level of using the truth does not always align with what truth-telling involves in more realistic social situations. The previous literature on sophisticated deception does not address the higher sophistication of telling the truth with bad intent, but merely reflects a simple choice that may be less cognitively demanding than an elaborate truth in a realistic context.

Future directions in the investigation of sophisticated deception

Future research could address the sophistication of truth-telling with a malicious intent to underly the socio-cognitive associated with it in a more ecological context that would mimic the real-life situations in which we might use it. One possibility would be to use vignettes including imaginary scenarios, such as the "Strange stories" developed by Happe (1994). One of the stories included a double-bluff scenario, where children were presented with a situation in which a soldier captured during war by his enemies was questioned about the position of his troops, the enemies being convinced that the soldier will try to deceive them. Given that the soldier chooses to tell the truth about his troops, children were asked to explain why he did that. This story was further used in other studies to measure higher-order ToM understanding (Osterhaus & Koerber, 2021; White et al., 2009) and is a prototype of a more ecologically valid procedure designed to measure sophisticated deception skills and their perception.

Furthermore, taking inspiration from developmental paradigms used to examine children's ability to maintain their initial lies, such as the temptation resistance paradigm (TRP; Lewis et al., 1989), sophisticated deception could also benefit from adding some subsequent questions meant to evaluate people's ability to argument their initial truthful response to convince a recipient to follow their saying. For example, in the TRP, children's ability to ensure consistency between an initial denial (e.g., *No, I did not peek at the toy*) and subsequent statements are evaluated through additional questioning. Researchers are asking children some questions, such as "How did you know the toy's identity?" (in a situation where children could not know what toy was it if they would not peek at it). Likewise, when investigating people's ability to use truthful statements with a malicious intent, future search could add follow-up questions made to test the deceptive consistency needed to be successful in their attempt to mislead the recipient. Following up on the methodology used by Sutter (2009) to investigate sophisticated deception, after choosing to send message A or B, participants could be asked to argue their initial message depending on their expectation that the other will follow or not their recommendation. Using neuroimaging methodologies, we could also test if trying to maintain sophisticated deception through subsequent arguments is

more cognitively demanding than simple deception, as some researchers are sustaining (Volz et al., 2015; Zheltyakova et al., 2020).

Besides the investigation of how sophisticated deception can be employed, people's attitudes towards this form of deception and children's understanding and moral evaluation thereof can also be an interesting future direction. For example, if we try to make sense of William Blake's poem from the beginning of this paper, sophisticated deception might be perceived as more hurtful than a full-bore lie, as it is shaking the way we perceive the conventional rules of our social interactions (e.g., the convention of always being sincere without any malicious intent). Furthermore, when people convey truthful messages to mislead others, they may not experience strong negative emotions such as guilt that are typically associated with deception (Sai, Wu et al., 2018). Thus, future studies could also investigate the possible differences in emotional consequences of different types of deception.

Conclusions

Sophisticated deception represents another facet of the complex act of verbal deception. Individuals can tell the truth to mislead another based on careful considerations of the recipient's expectations and the social context. This kind of deceptive strategy is more frequently used in highly competitive contexts, in which people may be suspicious of others' deceptive intentions.

Being known by many names in the previous literature, empirical evidence concerning sophisticated deception, although scarce, showed that as well as making false claims, telling the truth with bad intent can impose a higher cognitive load than simple truth-telling. These studies highlight the importance of deceptive intent and the socio-cognitive processes involved in acting on that intent and evaluating the outcome. Processes such as cognitive control, theory of mind, and inhibition are the most well-documented so far, neuroimaging studies showing the neural correlates associated with them (Carrion et al., 2010; Ding et al., 2014; Kireev et al., 2017; Leng et al., 2019; Sai, Wu et al., 2018; Sip et al., 2010; Volz et al., 2015; Zheltyakova al., 2020, 2021). However, the ecological validity of these studies should be enhanced, given the fact that they are studying the basic level of truth-telling and lie-telling, and do not include more sophisticated strategies that could be informative for real-life situations, such as negotiations, legal interviewing, moral education, or economics.

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STUDY ON INTEGRATING CHILDREN'S STORIES FOR LEARNING NUMERATION IN ROMANIAN PRESCHOOL EDUCATION

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ABSTRACT. The new Curriculum for preschool education in Romania, introduced in 2019, launches a challenge for educators: the active involvement of preschoolers in the activities carried out in kindergarten, their preparation for a social life based on cooperation, communication and action. One of the recommendations of the new curriculum is to organize the learning content in an integrated way. In this context, we intended to study how pre-school teachers' approach in an integrated way the teaching of numeration through stories, their role and importance. The data were collected using the survey method based on a questionnaire in Google Drive. The questionnaire was completed voluntarily and anonymously by 101 teachers for preschool education. Over 88% of respondents consider that stories contribute to a large or to a very large extent to learning the numeration and that preschoolers are actively involved in learning activities in which stories are used, obtaining very good mathematical performances. Almost all preschool teachers who attended the study found the use of stories in learning to be very beneficial, even if they face to some difficulties, including the lack of a collection of consacrated stories for learning numeration.

Keywords: *Children's stories, numeration, kindergarten, survey, Romania.*

1. Introduction

In recent years, a comprehensive process of reform, reorganization of the education system has begun in Romania, in order to align it with the European one. The new Curriculum for preschool education introduced in 2019, launches a challenge for educators: the active involvement of preschoolers in

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the activities carried out in kindergarten, their preparation for a social life based on cooperation, communication and action.

The Curriculum for early education (Ministry of National Education, 2019) requires two major changes within the preschool system which starts from the necesity of improving the quality of education at an early age to meet the requirements today's preschooler. One of the recommendations of the new education is to organize the learning content in an integrated way. The traditional monodisciplinary approach is now accompanied by an interdisciplinary, multidisciplinary design, organization and development of activities. Through the activities carried out in an integrated manner, the educator offers the preschoolers the chance to manifest themselves freely and creatively and creates a stimulating and diversified environment for the development of their personality.

The integration becomes a key concept, with the help of which the educator can carry out an educational approach focused on the needs of the preschooler, his possibilities and his pace of learning. According to Petrovici (2014) "mathematical activities in kindergarten are some of the most prolific activities, they can be approached in various forms, at any time of the day, both to the chosen activities and to the compulsory activities". Integrated teaching of mathematics can be done in many ways, one of the ways being the use of stories as an integrative element.

A story is defined in different ways as follow: "a description, either true or imagined, of a connected series of events" (Cambridge Dictionary, n.d.); "A description of events and people that the writer or speaker has invented in order to entertain people" (Oxford Learner's Dictionaries, n.d.); "A fictional narrative shorter than a novel" (Merriam-Webster, n.d.); "An account of something that happened. Stories can be imaginary, traditional, or true" (MacMillan Dictionary, n.d.). In Romanian language the story is defined as "A kind of epic (popular) in prose in which fantastic events of imaginary characters in the battle with evil characters are told and in which the good triumphs; fairy tale"; "A narration, exposition of a fact, of an event or of a series of facts or events in a gradual development" or "A literary narrative comprising possible and impossible facts" (Explanatory Dictionary of the Romanian language, n.d.).

The stories used in preschool education can be diverse, such as: stories with Romanian or foreign authors, Romanian or foreign folk tales, legends, fables, poems, etc., all of which being generically called "children's literature" or "children's stories". It is obvious that the stories from the universal literature that have been transposed in movies as well as the consacrated stories at national level or those who are specific to a certain geographical area are most often used in activities. Also, the methods used in story-based activities can be

as diverse as: text read by the teacher; storytelling based on pictures, picture books or picture videos; animated film; film with actors; story reproduction with tokens or miniatures objects; role-playing games; dramatization, etc.

The specialized literature mentions that integrating children's literature in mathematics education has many benefits that have been centralized by Demeny & Zsoldos-Marchis (2020) as follows: reduces mathematical anxiety (Furner, 2017a); increases the motivation for learning Mathematics (Albool, 2012); arising children's curiosity towards the mathematical notions (Zsoldos-Marchis, 2020a); increase children's engagement in mathematics learning (Trakulphadetkrai, 2015); promote active participation (Furner, 2017b; Zazkis & Liljedahl, 2009). Also as stated by Wilburne, Keat & Napoli (2011) almost any story written for children can be integrated in a preschool mathematical activity, and are efficient to develope different mathematical knowledge as: number sense (Albool, 2012; Lemonidis & Kaiafa, 2019; Heuvel-Panhuizen, Elia & Robitzsch, 2016); geometrical competences (Casey, Erkut, Ceder & Young, 2008; McAndrew, Morris & Fennell, 2017; Skoumpourdi & Mpakopoulou, 2011; Heuvel-Panhuizen, Elia & Robitzsch, 2016) or measurement abilities (Tucker, Boggan & Harper, 2010; Heuvel-Panhuizen, Elia & Robitzsch, 2016).

Thus, the main aspects covered in the study of natural numbers: the cardinal aspect, the ordinal aspect, the verbalization and the writing of figures (Magdaș, 2014) can be acquired and consolidated based on the stories. The cardinal aspect is highlighted by counting the characters or other elements in a story. The ordinal aspect is highlighted by identifying the position of a character or an element in the story in the numerical string. For example, for the story "Snow White and the 7 Dwarfs", after the pupils see a picture of the dwarfs in a certain order, the teacher can ask questions such as: "How many dwarfs have a red hat? Describe the third dwarf." At the same time, the children will verbalize the numbers and will identify the figure that correspond to a number by making different correspondences. For example, for the story mentioned above, the children will choose the figure 7 which correspond to the numbers of dwarfs. In addition, the stories give the possibility to perform addition and subtraction operations that are also studied in preschool education in Romania. Depending on the specific content approached, the teacher can create stories or transform stories already known by children by adding characters or additional elements, for example to the story "Little Red Riding Hood" can be added to the story that "On her way to Grandma's house, Little Red Riding picks 3 red and 2 yellow flowers. How many flowers did the little girl pick?". By integrating the stories into activities, can be identified characteristics of the characters or objects through which knowledge about shapes, colors, sizes, spatial positions, aspects regarding time, etc. are consolidated. So that

pupils will develop their interdisciplinary and mathematical knowledge as well as language.

Studies conducted in Romania show that Romanian teachers have a positive attitude towards mathematical children's stories and consider useful the use of children's stories for mathematical education in preschool and classes 0 - 2 of primary school (Zsoldos-Marchis, 2020a, 2020b).

Based on these considerations, we conducted a survey to find out the most used stories to learn numeration in preschool in Romania and to what extent they are used. The results obtained from the application of the questionnaire are presented in this paper.

2. Research Questions

Through this research, we proposed to answer to the following questions about learning numeration in preschool education in Romania: How often the stories are used by teachers in preschool activities?; What types of stories are used ?; What are the most commonly used stories ?; What are the criteria according to which the teachers choose the stories ?; What types of math activities are the stories used for ?; To what extent do stories help to learn the numeration and activates the preschooler ?; To what extent does the use of stories lead to superior learning outcomes ?; What are the positive effects of integrating stories into learning, but also what are the difficulties / limitations of using them in preschool education?

3. Purpose of the Study

By analyzing the answers to these questions, we aim to identify the role and the importance of using stories in learning numeration, from the perspective of preschool teachers. These results are a starting point for developing a collection of stories useful in learning numeration along with methodical suggestions and examples for their integration into preschool activities.

4. Research Methods

Procedure. We created a questionnaire by using the Google Forms application in Google drive, which was distributed between March and April 2021 on the social network Facebook and by e-mail. The survey included 16 items, out of these, 14 were multiple choice questions, one item was an open answer question and one was a dual choice question. The collected data were statistically processed and represented in diagrams by using the Microsoft Excel program.

Participants. The questionnaire was completed voluntarily and anonymously by 101 preschool teachers. Regarding the participants' educational level, 63% of them have Bachelor's degree, 32% of them have a Master's degree. Only 5% graduated only the secondary education (Pedagogical High School). Regarding the didactic degrees (which are stages of the didactic career), almost half (44%) of the respondents have the Ist Didactic Degree (the highest didactic degree), 30% of them have the IInd Didactic Degree, the Definitive Degree is held by 15% of respondents, while 11% of them are beginners.

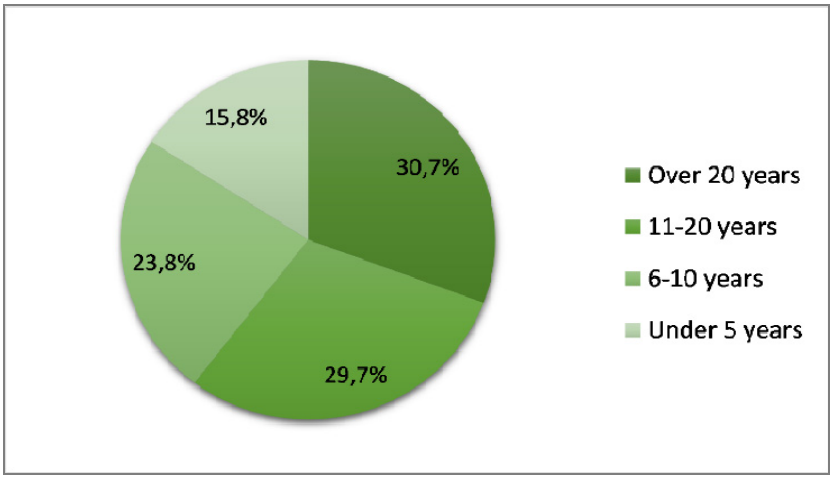

Figure 1. The seniority in teaching of the respondents

Regarding of their seniority in teaching (Figure 1), more than 60% of teachers have at least 11 years old in teaching. On average, 56% of respondents work in institutions located in urban areas and 44% in rural areas. Thus, we consider that the group of respondents have the qualification and teaching experience that allows them to make assessments relevant to the issues investigated through the questionnaire. As 45% of respondents teach in kindergartens in rural areas, the information collected also reflects the situation in areas with fewer material resources.

The research material consists of the answers expressed in the questionnaire.

5. Findings and Discussions

By applying the questionnaire, we obtained the following results. Regarding how often they use stories in mathematical activities (Figure 2), over 75% of respondents use stories at least once every 2-3 weeks, while only 6% use them rarely, i.e., several times a year or less.

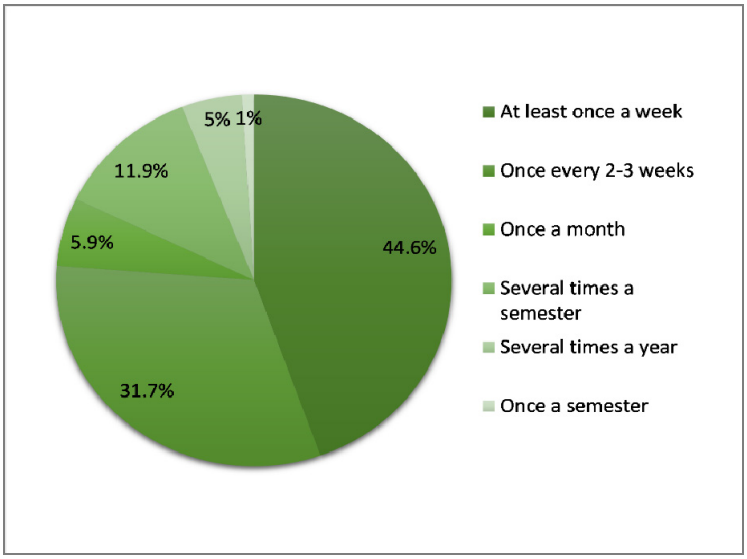

Figure 2. Distribution of teachers according to how often they use stories in mathematical activities

Regarding the types of stories used by teachers in mathematical activities (Figure 3), over 70% of teachers use stories known to children, while over 50% of them integrate invented stories into activities. From the respondents' findings we find that teachers prefer to create stories rather than transform familiar stories or use lesser-known stories by pupils. This is probably due to the fact that it is easier for educators to use a smaller variety of stories but which the students know very well and for which they probably already have teaching material ready to be used.

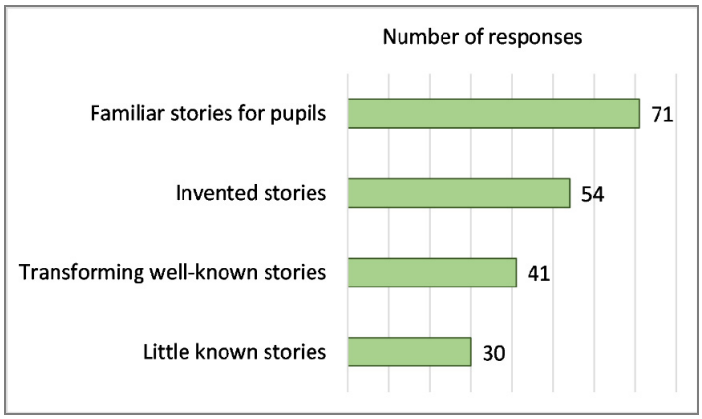

Figure 3. Types of stories used in mathematical activities

Respondents mentioned a total of 281 stories used for numeration, so each respondent named an average number of 2.78 stories. This number is relatively small considering that numeration is the most widely studied content in preschool education, and the stories are extremely varied and attractive to children. One cause of this small number of stories mentioned by respondents may be due to the lack of an official collection of texts proposed for kindergarten and to the lack of methodological guidelines for using stories in instruction. So that, teachers use the texts they consider appropriate, based on their own experiences, knowledge and teaching materials existent. The most used stories in mathematical activities are (Figure 4): "Snow White and the Seven Dwarfs" mentioned by almost half (48.5%) of respondents, "The Goat and Her Three Kids" mentioned by 44.6% of respondents and "The Three Little Pigs" mentioned by 38.6% of respondents. In Figure 4 we represented the stories mentioned at least 2 times by the respondents and we marked in blue the stories from universal literature, respectively with yellow those from the Romanian literature.

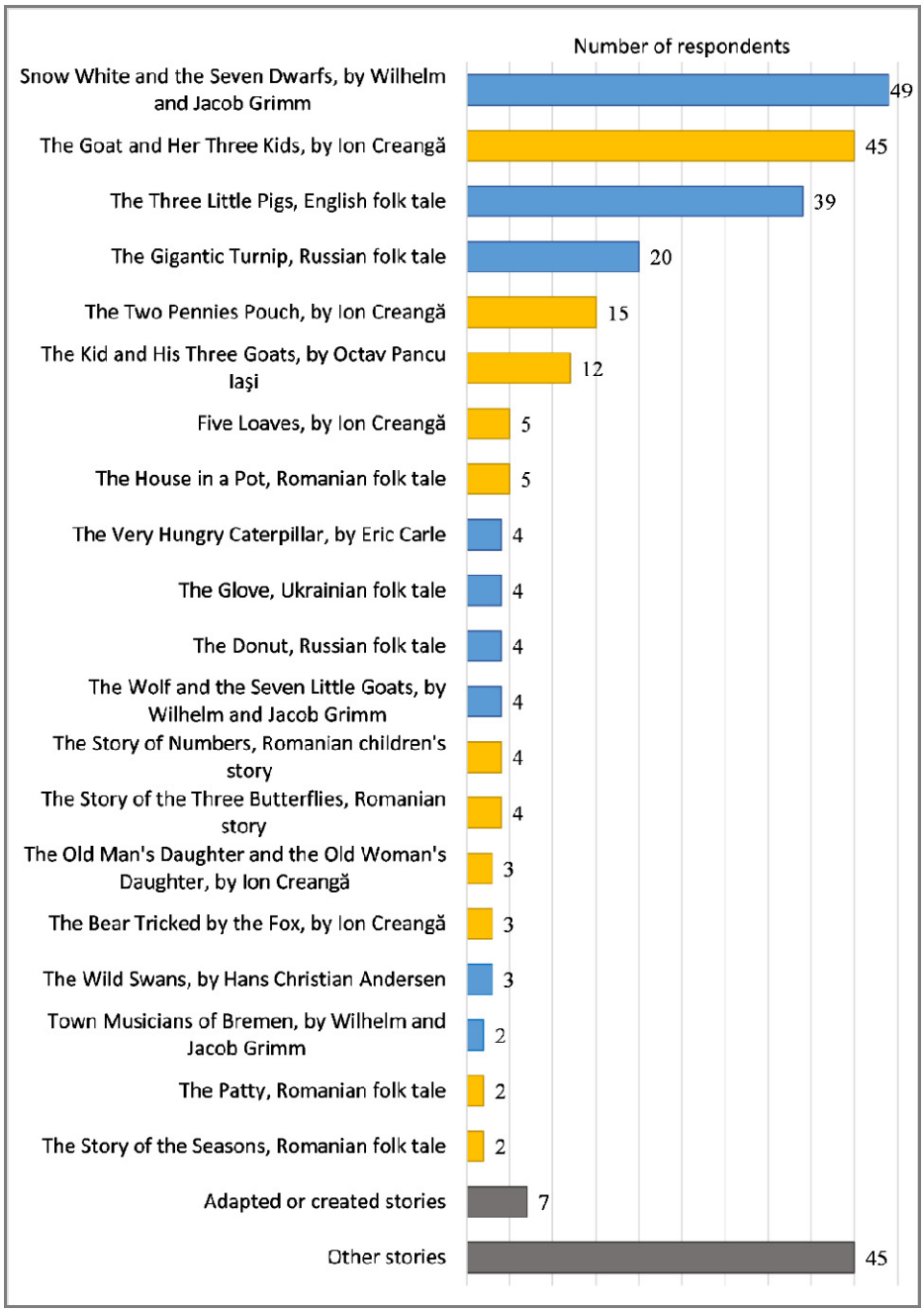

Figure 4. Stories for numeration used in kindergarten

Regarding the most important criteria for selecting the stories used in mathematical activities (Figure 5), almost 80% of teachers choose the stories considering the age and individual characteristics of children, 68.3% choose them according to the objectives and content of the activity, and 64.3% depending on the children's level of understanding. Although teachers do not always have adequate material at their disposal, this is not the first criterion underlying the selection of stories, which is a good thing that shows the responsibility and involvement of preschool teachers.

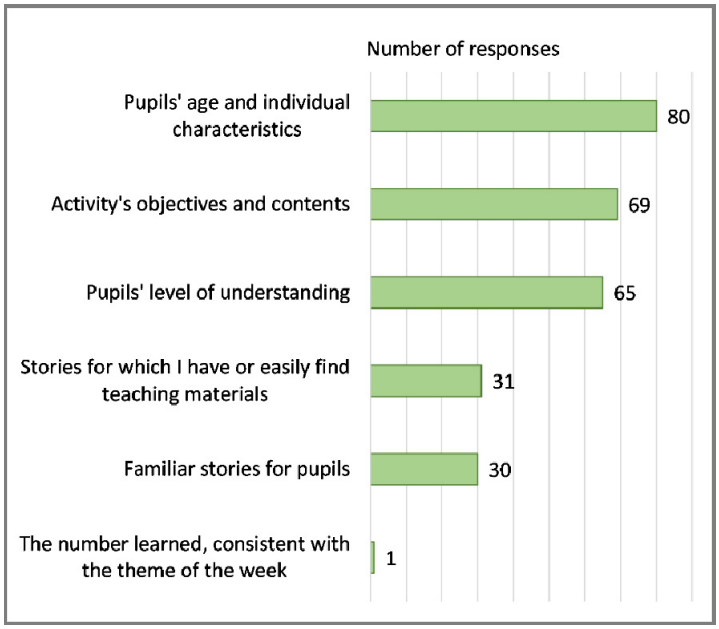

Figure 5. Criteria according to which preschool teachers choose stories in mathematics activities

Among the respondents, almost three quarters use the stories for practice numeration (73.3%), as well as in teaching-learning activities (72.3%) or for consolidation activities (69.3%), while more than a half (54.4%) use the stories also in assessment activities.

Regarding the contribution of stories to learning numeration, 88.1% of respondents consider that stories have a large or a very large contribution, while only 1% consider that the stories contribute to a small extent.

All respondents consider that students actively participate in the lessons in which stories are used, more precisely, 48.1%, respectively 48.5%

of the respondents noticed that children actively participate to a very large extent, respectively to a large extent in these activities.

Almost three quarters (73.3%) of the respondents consider that the results obtained in the mathematical activities in which stories were used were very good, 24.8% consider that the results were good and only 2% consider the results as sufficient.

Among the positive effects of using stories (Figure 5) 70.2% of respondents consider that integrating stories is an attractive way to learn numberation and help to a better understanding. More than half of the respondents consider that the use of stories has all the positive effects mentioned in Figure 6.

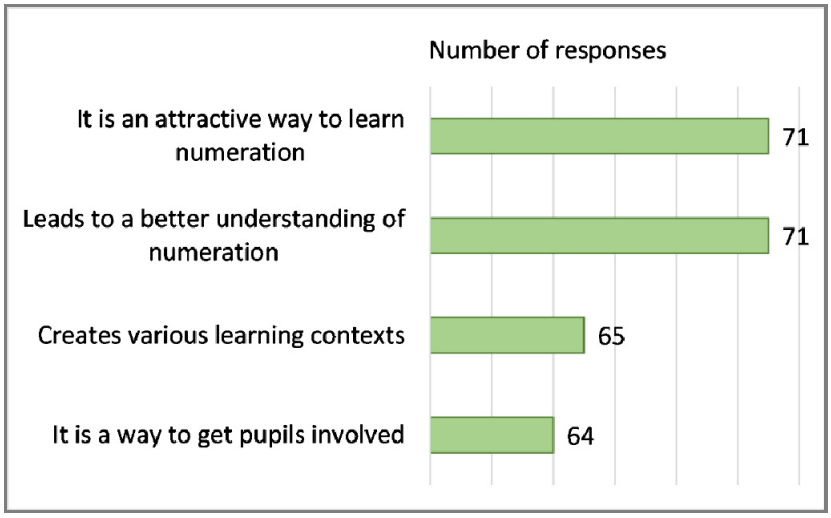

Figure 6. Positive effects of using stories in learning numeration

However, the use of stories in learning numeration also encounters some difficulties (Figure 7). The biggest difficulty encountered by the respondents refer to the appropriate teaching material for the stories because it has to be created by the teachers, an aspect mentioned by 57.4% of the respondents. Another limitation would be that in the methodological guides for preschool education there is no recommended collection of stories for numeration, an aspect mentioned by 31.8% of the respondents. A solution to this problem would be a collection of stories that can be used to learn numbering, along with methodical suggestions and examples of activities.

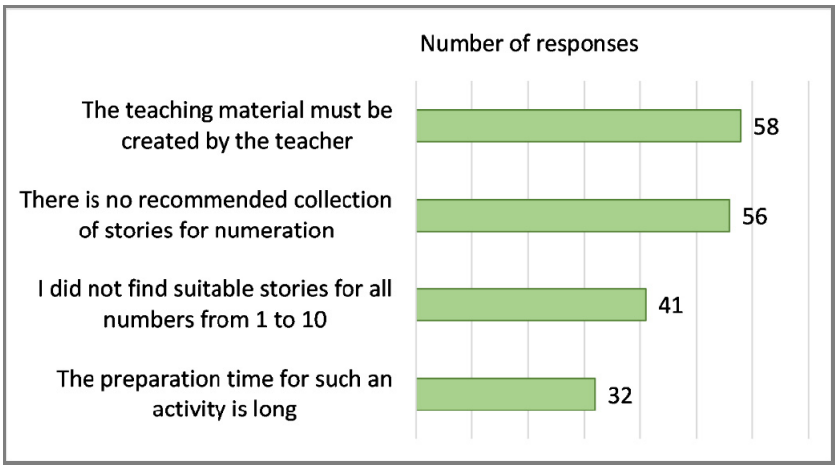

Figure 7. Difficulties and limitations in using stories in learning numeration

6. Conclusion

Preschool teachers have adapted appropriately to the Early Education Curriculum by which a new curriculum design model, focusing on key competencies, areas of development and integrated content approach was introduced.

Our research shows that preschool teachers consider the use of stories to be a good idea, challenging, interesting, which gives very good results in working with preschoolers, as a way to activate and actively involve children in learning activities. The prescool teachers use stories in teaching-learning activities but also in consolidation and assessment activities. Based on the questionnaire addressed to preschool teachers in Romania, we identified that the most used stories are the known ones, such as "Snow White and the Seven Dwarf", "The Three Little Pigs" etc. from the universal literature, or "The Goat and Her Three Kids", "The Two Pennies Pouch" etc. from the Romanian literature, but some teachers also use lesser-known stories or invent other stories. The use of stories for learning numeration has many positive effects, including: it is an attractive way to learn to count, helps to better understand numeration, creates various learning contexts. There are also some difficulties and limitations of using stories in learning numeration as: the teaching material needed in such activities must be created by the teachers, they cannot use the stories to learn all the numbers from 1 to 10 because they have not found adequate stories, but especially the fact that there is no recommended collection of stories dedicated for learning numeration.

Based on these findings, in order to increase the level of teachers' competence, it would be necessary to develop methodological guidelines that include theoretical foundations, projects of learning units and integrated activities based on stories for learning numeration, but especially the publication of a collection of stories for learning numeration, along with methodological suggestions for organizing such activities.

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PRE-SERVICE TEACHERS' KNOWLEDGE AND OPINION ABOUT STEM EDUCATION IN PRESCHOOL

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ABSTRACT. In recent years, the focus of many researches has been on STEM activities and their application possibilities. The current research examines the opinion and experience of 85 Primary and Preschool Pedagogy specializations students regarding the use of STEM activities in kindergarten. The research tool was a questionnaire that included 18 questions: 5 questions with demographic data, 3 questions on how to integrate different experiential fields in pre-school activities, and 10 questions related to students' knowledge and experience about STEM activities.
The results show that students integrate different experiential fields. More than half of the respondents are unfamiliar with the term STEM and don't have any personal experiences with STEM. These results highlight the necessity of integrating STEM Education in pre-service and in-service teachers training. The results also present students' opinion about the essence and opportunities of STEM Education, and the cognitive, emotional, social, and physical skills/abilities most developed by STEM.

Keywords: *pre-service teachers, preschool, STEM education.*

INTRODUCTION

Science, mathematics, technology and engineering provide knowledge, skills and tools for solving problems from everyday life, for improving life quality. It is very important that members of the society, and especially young people, have the right level of scientific and technological literacy, which competencies are useful both at workspace and everyday life. (English 2016, NGSS Lead States, 2013, National Research Council, 2014,).

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What does the concept of STEM activities mean? STEM is an acronym of the first letter of four words, which means the combination of science, technology, mathematics and engineering. STEM activities have become the focus of national academies, as research has shown that fourth-year children who did not encounter STEM activities in their early years lacked math and science key/basic skills. Furthermore, Chesloff (2013) found that curiosity, creativity, collaboration, and critical thinking are among the central concepts of STEM activities, and therefore the application of these activities should be initiated/applied in preschoolers. Lippard, Lamm, and Tank (2019) emphasize that children's early positive STEM experiences are key to addressing the challenges of the modern world.

Young children are basically characterized by a natural curiosity and enthusiasm for exploring the world around them, for these children science means the knowledge they discover (Conezio and French, 2002). Research results, highlighted by the National Association of Educators of Young Children (NAEYC) have shown that the earlier we support and guide children to marvel at the outside world, the more successful they will be later in all areas of learning (Pawilen and Yuzon, 2019). From science, young children learn important concepts and facts related to their experiences of everyday life (Carale and Campo, 2003; Conezio and French, 2002; Tolman, 1995) which is why interest in science can be easily introduced from an early age. Gaining scientific experience in children also develops many of their cognitive skills. They learn and acquire important skills such as the processing skills, critical thinking, and life experience they need to cope with their everyday tasks (Chaille and Britain, 2002). At the same time, science is a collaborative relationship where working together and discussing ideas are important for practice (Worth, 2010). Technological education of young children is about developing, inventing, and creating new ideas that are actually related to engineering science. Providing young children with access to technological knowledge allows them to look at how certain tools work, how to further develop objects/tools to meet a need or solve a problem, and develops curiosity, creativity in by discovering new things (Pawilen and Yuzon, 2019). Engineering education allows young children to apply their math and science knowledge in order to develop, model, and evaluate something, and to find solutions to problems that arise. At the same time, the engineering creation process, which involves identifying the problem, evaluating the options, and optimizing the solutions, is very important in a wide variety of problem solving. Therefore, preschool teachers can use kindergarten children's favorite play activities (such as building from blocks or rocks or sand) to develop young children's engineering and design skills (Meeteren and Zan, 2010). Mathematics is an

important subject in the curriculum which develop skills useful in everyday life, as counting, calculating, measuring, estimating, comparing, classifying, grouping, etc. At the same time, mathematics develops problem solving and logical thinking, which are also important to thrive at work and in everyday life (Pawilen and Manzano, 2007).

Numerous studies demonstrate (for example, Watts et al. 2014) that early childhood scientific, mathematical, engineering, and technological knowledge and experience significantly influence school performance. In order for preschool children to have adequate knowledge of STEM, the kindergarten teachers who educate them must have the appropriate level of knowledge and experience. In Romania, the current Curriculum focuses on the holistic development of children, taking into account several areas of development, while supporting a balance between the harmonious development of learning and personality. Kindergarten activities are organized on the basis of the principle of integration, where the learning process is realized by connecting several experiential fields (Ministerul Educației Naționale, 2019). However, this does not yet mean the integration of STEM activities into the Curriculum. Moreover, the acquisition of the planning/application of STEM activities is not implemented in the Romanian teacher training either. In Romania future primary and preschool teachers are not trained in the Engineering and Technology domains, thus they usually exclude the Engineering and Technology domains from their teaching activities. The Science, Mathematics, Arts and Reading domains are quite frequently integrated in their teaching activities (Zsoldos and Ciascai, 2019).

In this paper a research is presented about Primary and Preschool Pedagogy specialization (PPP) students' opinion and practice on the specifics of STEM activities in preschool, based on their experiences gained during pedagogical practice.

METHODOLOGY

This survey was conducted in the first semester of the 2021-2022 academic year. The aim of the research was to map preschool and primary school pedagogy specialization students' opinions and experiences regarding the use of STEM activities in kindergarten.

Research questions:

This research tries to find the answers for the following questions:

Q.1. What are the areas which students can successfully integrate into the planning of preschool activities?

Q.2. Are students familiar with the term STEM and its meaning?

Q.3. In students' opinion, what are the essence of STEM activities in education and what cognitive, social, physical, emotional skills/abilities do STEM activities develop?

Q. 4. What personal experience did students gain in applying STEM activities during their pedagogical practice?

Q. 5. In students' opinion, how can the more frequent use of these activities be encouraged?

Participants

The participants of this study were 85 Primary and Preschool Pedagogy specializations students from Babes-Bolyai University: 51 second-year students and 34 third-year students. In terms of gender distribution, 1 (1,2 %) of the respondents was male, this under representativeness of male students is typical for PPP student population.

Instrument

In the research an online questionnaire edited in Google Forms was used which included 18 questions: 5 questions regarding demographic data, 3 questions about how to integrate different experiential fields in pre-school activities, and 10 questions related to respondents' knowledge and experience in STEM activities. Questions about STEM activities were adapted from a questionnaire developed for early childhood education teachers, as well as student teachers, used in several countries as part of the "Kitchen Lab for Kids" Erasmus+ project, coordinated by the University of Catalunya (K4K, 2020).

RESULTS

Q.1.: The experiential fields which can be successfully integrated in students' opinion

95.3% of respondents integrate different experiential fields. This explains the validity of the principle set out in the Curriculum as a recommendation (Ministerul Educaţiei Naţionale, 2019). In the second question respondents had to indicate which experiential fields could be optimally integrated. In accordance with the current Romanian Curriculum regulations, the following experiential fields are included in kindergarten: environmental education,

mathematics, mother language, Romanian language, physical education, handicrafts, fine arts education, singing music, and moral/household education. In the questionnaire a table which contains the names of the experiential fields both in the rows and the columns was included. Respondents had to mark in each row of the table the experiential fields which can be integrated with the experiential field given in that row. The number of occurrence of each experiential field pair which can be integrated was counted. The results have shown that environmental education was most often associated with mathematics (40) and mother language (17) by both second- and third-year students, and mathematics was also most often associated with environmental education (38). In the case of mathematics, the activities chosen in addition to environmental education differed between second- and third-year students: second-year students would prefer to integrate it with fine arts education (8) and handicrafts (6), and third-year students would integrate it with mother language (4) and physical education (4). Mother language activities are combined with singing-music (25), environmental education (14) and fine arts education (16) in both groups, in different proportions. Romanian language (which is the official language of the state but taught as a foreign language), was most frequently integrated with singing and music education (28) from both groups, as well as fine arts education (17). To integrate singing and music activities, second year students preferred physical education (16) and third year students preferred fine art education (12), but physical education was also the second most common answer (9). Fine arts education would be linked to the same activities by members of both groups, only in different proportions: while second year students would add to their knowledge of the environment (16), third-year students chose the mother language activity (15) in greater numbers. Moral/household activities were most often integrated with mother language activities (39) in both group of students. The biggest discrepancy was observed for handicraft activities, with the two groups choosing completely different experiential fields for association: second-year students tended to associate them with environmental knowledge (12) and mathematics (9), while third-year students integrated them with mother language (11) and singing-music activities (5). With physical education activities, both groups linked singing/music (37).

Q. 2. Students' knowledge about the STEM term and its meaning

67.4% of the respondents are unfamiliar with the term STEM: 64.7% of second-year students and 73.52% of third-year students did not know the acronym STEM. It is surprising that the result is worst in the third-year group, this shows that the subjects learnt during university studies didn't help them

to familiarize with STEM education. Comparing this result with those from other countries, seems that the familiarity with STEM of pre-service or in-service preschool teachers is different from country to country and even depends on the higher education institution where the participants are studying. For example, in the study of Karademir and Yıldırım (2021), pre-service preschool teachers in their last year of study could give a definition for STEM education, while in the research of Baltsavias and Kyridis (2020) in-service preschool teachers are not so familiar with STEM education or in the experimental research of Aleksieva, Mirtschewa, & Radeva, (2021) participating preschool teachers were unfamiliar with STEM before the intervention. These results suggest that teachers' familiarity with STEM education depends on the pre-service or in-service teacher training curriculum.

After some description what STEM education is, students were asked to give the logical value of some affirmations about STEM education, affirmations from which three were false. The first false statement was that STEM activities are included in the current Preschool Education Curriculum in Romania. 4 (7.84%) second-year students thought this statement to be true, and none of third-year students marked it as true. The other false affirmation was that STEM activities could only be applied successfully at school. In this respect, 6 (11.76%) second-year students considered the statement to be true, and 2 (5.88%) third-year students chose it as true. The third false statement was that STEM activities always require digital tools. 11 (21.56%) second-year students and 5 (14.7%) third-year students considered this affirmation to be true. It is interesting to observe, that despite the fact, that third-year students were less familiar with STEM education, after a short explanation they were more able to understand what STEM Education is. Maybe they have already had some knowledge about STEM education, they only have never met the acronym STEM.

Q. 3.: Students' knowledge about the essence of STEM education and the cognitive, social, physical, emotional skills/abilities developed by STEM

To find out student's opinion about the essence of STEM Education in preschool and the opportunities it gives, two set of affirmations measured on a 5-leve Likert scale were formulated. For comparing the answers given by the two groups two-sample t-test was used in case of each statement (Table 1). There are small differences between means in case of some affirmations, but no statistically significant difference was found for any of the statements. Second-year students have higher mean in case of 5 statement out of 7 as regarding the essence of STEM Education and 6 statement out of 8 as regarding the opportunities of STEM Education. The most agreed statement describing the essence of STEM Education

is that it encourages children to think creatively in science areas. Creative thinking appeared the most important benefit of STEM education also in other research (Karademir & Yıldırım, 2021). The most agreed opportunities of STEM education are building children's knowledge about the social, natural, and technical world; having practical experiences; and awakening positive emotions and motivation to learning in the sciences.

Table 1. Comparison of the answers given by the second- and third-year students about the essence and opportunities of STEM Education in preschool

Statement	2nd year		3rd year		p	t
	Mean	**Var.**	**Mean**	**Var.**		
Essence of STEM Education						
1. Encouraging children to learn through direct and personal experiences	4.24	0.66	4.26	1.11	0.890	0.138
2. Encouraging children to think creatively in science areas	4.55	0.49	4.32	0.77	0.215	-1.254
3. Developing an active process of learning – teaching	4.16	0.69	4.24	0.91	0.698	0.390
4. Identifying and solving problems in natural everyday situations	4.12	0.83	3.94	1.33	0.456	-0.750
5. Building an integrated, holistic world view in the child's mind	3.94	0.74	3.91	1.05	0.891	-0.138
6. Supporting the child's holistic development	4.02	0.62	3.85	0.86	0.392	-0.862
7. Developing the process of learning– teaching, incorporating at least two of the STEM areas	4.16	0.77	4.00	1.09	0.473	-0.721
Opportunities of STEM Education						
1.Building a positive self-image	3.61	0.92	3.59	1.16	0.932	-0.086
2.Awakening positive emotions and motivation to learning in the sciences	4.53	0.41	4.38	0.55	0.348	-0.946
3.Building children's knowledge about the social, natural and technical world	4.63	0.32	4.38	0.55	0.106	-1.641
4.Self-directed and independent learning	4.04	0.80	4.18	0.82	0.493	0.690
5.Collaborative learning	3.90	0.93	4.03	0.70	0.519	0.648
6.Having practical experience	4.59	0.33	4.47	0.68	0.472	-0.723
7.Encouraging children to learn by playing	4.47	0.61	4.29	0.88	0.368	-0.906
8.Asking questions and searching for answers by doing experiments	4.41	0.73	4.35	0.72	0.756	-0.312

The next four questions tried to find out what cognitive, emotional, social, and physical skills/abilities the STEM activities develop according to students. In the field of cognitive skills, the majority of respondents 56 (75.6 %) say that exploratory and creative thinking can be developed most through the use of STEM activities in early childhood. This result is the same as that obtained in the partner countries of the K4K Erasmus+ project (K4K, 2020). Also Turkish preschool teacher candidates consider STEM activities as helpful for developing children's creativity (Ültey & Ültey, 2020; Karademir & Yıldırım, 2021). 70% of the respondents (81.4%) thought that STEM activities are the best way to develop teamwork among social skills / abilities, which confirms previous research results (K4K, 2020; Karademir & Yıldırım, 2021). Regarding the emotional skills/abilities, most respondents 59 (68.6%) said that STEM activities develop independence the most. This answer ranked second among the results of the research used for developing the questionnaire (K4K, 2020). According to students, the following two physical skills and abilities are most developed in STEM activities: experiencing the world through the senses (52 responses, 60.5%) and fine and great motor skills (51 responses, 59.3%), which results are similar to those obtained by the K4K team (2020).

Q. 4.: Students' personal experience with STEM activities

52 (60.5 %) of the respondents said they had no experience in this area (see Table 2). This result is thought-provoking because in the K4K project most respondents, who were early childhood education teachers or student teachers, already had some personal experience in applying STEM activities. The most frequently selected (by 18 students) type of experience is conducting science observations and experiments.

Table 2. Respondents' personal experience with STEM activities

Type of experience	2nd year students (frequency)	3rd year students (frequency)	Total (frequency)
1. Conducting science observations and experiments	11	7	18
2. Researching physical characteristics of the world	8	3	11
3. Workshops in the area of Informatics	5	0	5
4. Interdisciplinary projects integrating at least 2 different areas of STEM education	1	3	4
5. Fieldtrips and workshops (in the wood, at the meadow, etc)	7	3	10
6. Excursions to science centers/university laboratories or workshops	8	3	11
7. I do not have any STEM experience in early childhood education.	29	23	52

Q. 5.: Ideas for making STEM activities more often used in kindergarten

Respondents think that in order to make STEM activities more often used in kindergarten, the knowledge of kindergarten teachers about STEM contents and methodological aspects related with these activities should be increased (56 responses, 64%). Training in STEM education and support for the trainees in implementation of STEM activities in their preschool groups is an efficient way to increase teachers confident in their STEM knowledge and to change their attitude towards STEM activities (Aleksieva, Mirtschewa, & Radeva, 2021; Fridberg, Redfors, Greca, & García Terceño, 2022). STEM education related disciplines should be included also in prospective preschool teachers' academic training. Even one STEM education discipline could have a significant impact on prospective preschool teachers' tendencies about integrated STEM activities (Uğraş & Genç, 2018). There is also a need for long term professional support in STEM implementation. Those professional development programs in STEM education which includes practicum with the guidance of a mentor offer STEM teaching experiences and are more efficient (Chen, Huang, & Wu, 2021). 11,6% of the respondents consider that changing preschool teachers' motivation regarding STEM activities would also help improving the situation. Research show that motivation for teaching STEM increases as confident in STEM content related and methodological knowledge increases (Aleksieva, Mirtschewa, & Radeva, 2021), thus teacher training would be the solution also for this suggestion. 9,3% of the respondents consider that providing preschools with the necessary STEM tools would also contribute to the increasing frequency of the STEM activities. The lack of the necessary tools is considered one of the main obstacles for implementing STEM in preschool (Ültey & Ültey, 2020).

CONCLUSION

The aim of the research was to map students' opinions and experiences regarding the use of STEM activities in kindergarten. The results show the following:

Primary and Preschool Pedagogy specializations students integrate different experiential fields, this is in accordance with the current Romanian Curriculum regulations. The results show that the most often associated experiential fields are environmental knowledge and mathematics. This can be a starting point for understanding the importance of implementing STEM activities, as these activities include mathematics and science. Unfortunately,

more than half of the respondents are unfamiliar with the term STEM. It is surprising that the result is worst in the third-year group, this shows that the subjects learnt during university studied didn't help them to familiarize with STEM education. More than half of the respondents have no personal experience with STEM. The most agreed statement describing the essence of STEM Education is that it encourages children to think creatively in science areas. The most agreed opportunities of STEM Education are building children's knowledge about the social, natural, and technical world; having practical experiences; and awakening positive emotions and motivation to learning in the sciences. The cognitive, emotional, social, and physical skills/abilities most developed by STEM activities, in the view of the respondents, are exploratory and creative thinking, independence, teamwork, respectively experiencing the world through the senses and fine and great motor skills.

The results of the study show that there is a need for change at several levels: at the curriculum level the teaching of STEM activities should be included, and at the pre-service and in-service teacher training level preparation for teaching STEM activities should be included.

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ADAPTING THE *ADDIE* INSTRUCTIONAL DESIGN MODEL IN ONLINE EDUCATION

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ABSTRACT. The instructional design approach should begin with requirements evaluation to evaluate the necessities of the online learning event, such as what the learner should understand and be capable of doing as an outcome of the education or understanding solution and what learners immediately understand and can perform.
Instructional designers widely use ADDIE to create modules, models, software, and courses for instruction and learning. It is also used as a design model. It presents a series of repetitive steps to build effective education and training in five phases, giving rise to the acronym: A-D-D-I-E, which stands for analysis, design, development, implementation, and evaluation.

Key words: *instructional design, e-learning, ADDIE model.*

Introduction

As a definition, instructional design = ***is the act of anticipating and prefiguring the teaching approach to achieve an effective prefiguration of the knowledge strategy***. (Gagné, 1965) We can use several models in developing an instructional design, such as ADDIE and SAM (Okey, 1991).

An instructional designer employs this systematic methodology (based on informative assumptions and prototypes) to establish substance, knowledges, and additional answers to aid in acquiring new knowledge or skills (Okey, 1991).

Instructional design ***should commence by coordinating a necessities appraisal to ascertain the requirements of the online knowledge instance, encompassing what the learner must understand and perform as an outcome of the preparation or mastering answer and what learners immediately understand and can perform*** (Buscombe, 2013).

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Instructional plan is mindful for making the course plan and creating all preparing materials, counting introduction materials, learner guides, presents, work helps, etc. It goes more frequently than ever in charge of assessing the preparation, which incorporates deciding what was learned and whether the learning arrangement brought about in quantifiable conduct alter (Buscombe, 2013).

The instructional design ***follows a needs assessment system, process design, materials development, and effectiveness evaluation***. To maximise the learning experience and knowledge transfer, instructional design necessitates analysing and choosing the particularly suitable strategies, methodologies, and technologies (Buscombe, 2013). A guidelines plan continues, and the portfolio should incorporate the information and aptitudes required to effectively plan a web learning activity (Gagné, 1985). In the future, whether creating online instruction or an on-demand execution back arrangement, taking after sound ISD forms will offer assistance we make way better and more fruitful arrangements (Buscombe, 2013).

Organisations and their learning functions evolve in tandem with the pace of change. Flexibility, creativity, and innovation are all becoming more valuable. As an outcome, ***intelligent and perpetual design patterns are gaining traction*** (Gagné, 1985). The instructional design also ***borrows additional components from the fields of user experience design (UX) and design thinking***. While several instructional design models and processes, many components are similar. These are the following: analysis, design, development, implementation, and evaluation (Buscombe, 2013).

THE *ADDIE* MODEL

Instructional designers widely use ADDIE to produce modules, models, software and courses for instruction and learning (Morrison et al., 2010). It is also used as a design model that presents a series of repetitive steps to build effective education and training in five phases, which creates the acronym: A-D-D-I-E stands for ***analysis, design, development, implementation and evaluation*** (Rossett, 1987; Gustafson & Branch 2002). (Figure 1).

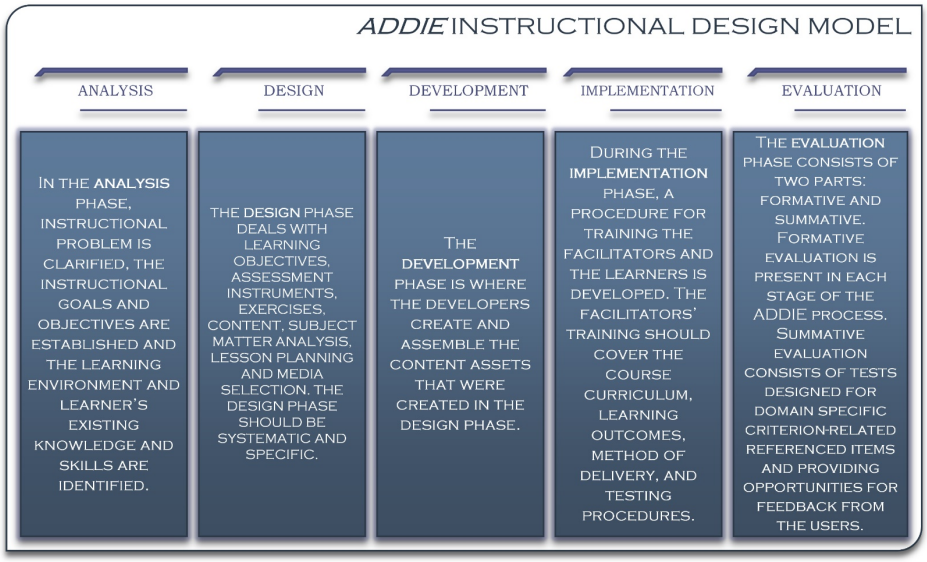

Figure 1. *ADDIE* Instructional Model
(Adaptatation after www.instructionaldesign.org - https://www.instructionaldesign.org/models/addie/#google_vignette)

RCM's goal in incorporating the ADDIE model is twofold: ***to improve teacher instructional strategy and student academic performance***. RCM intends to provide teachers with guidance for using the concept map construction method in the schoolroom and basic surroundings. This investigation is anticipated to assist students in shifting their knowledge patterns from rote understanding to constructive concept learning, which requires them to actively engage in the knowledge procedure (Gustafson & Branch 2002).

Training and exercise are crucial elements of patient security, both as potential contributors to injury risks and hazards and interventions to eliminate or prevent such injuries. Too often, we have relied solely on education as the single involvement for patient security without considering other options or realising that, in some cases, the training systems are inadequate. ***Applying established design principles to education and training is one way to ensure safety by design***. ISD (instructional systems design) is a methodical approach to creating educational materials, developing education and training programs to improve student performance. The ISD process consists of five interconnected steps: analysis, development, design, implementation, and evaluation (ADDIE). (Briggs, 1975).

Careful consideration of the role of education and training, both as a potential latent system hazard and as a possible intervention, is needed to maintain patient safety. As a result, ***educational and training activities must be carefully planned***. to be effective (Coulter, 1990; Duan, 2006; Levinson, 2010).

The ADDIE show may be a nonexclusive, precise, step-by-step system utilised by guidelines originators, designers, and coaches to ensure that course advancement and learning don't take put in an advertisement hoc, unstructured way (Reason, 1997).

This model is designed to provide:

- learners achieve course objectives;
- assess learner needs;
- design and development of material instruction;
- evaluation of the effectiveness of instruction using specific programs (Reason, 1997).

The ADDIE informational design prototype offers ***a stepwise procedure that assists practitioners plan and creates education schemes***. The ADDIE pattern model rotates across the succeeding five elements (Reason, 1997):

Analysis phase

While most designers prefer to begin with the more enjoyable phases first, it is essential to avoid skipping these earlier, research-based phases and steps. So, to begin, what analysis of the topic do we need to perform (Reason, 1997).

Instructional designers have addressed these three critical analyses (Reason, 1997):

a. Training Needs Analysis: not only to determine if training is needed but to identify and measure performance improvement expectations.
b. Audience Analysis: if training is needed, the next step is to analyse the students. Understanding your audience's primary demographics and background can help you determine the best delivery method.
c. Task analysis: once you know the purpose of the course and understand more about the students enrolled, you can successfully move on to the next steps of the ADDIE instructional design model. You will instruct learners by breaking down the process into a step-by-step format.

This phase is intended ***to define project needs and existing constraints***. Its primary goal is ***to explain informational issues, found purposes, and recognize the knowledge environment, containing the learner's subsistent understanding, abilities, and information***.

Here are some of the concerns commonly interviewed during this phase:

- Who is the intended audience?
- What are their skills and characteristics?
- What do they need to learn?
- What kinds of constraints exist?
- What is the deadline for completion?

Design Phase

We should know how and where the information should be presented during the design process. This usually means designing the course outline. We should also understand the general connections between text, media and navigation (Yadla & Rattigan 2003).

This stage is essential for ***addressing the training objectives***. Various variables perform a critical involvement in the design phase of online courses, including:

- Time;
- Budget;
- Resources;
- Inspirational bibliography (Yadla & Rattigan 2003).

Based on the period allocated in favor of the training, we determine approximately how much time we will have for the duration of the program, taking into account the instructor's pace, the format of the course, and the mode of delivery, adjusting the content and design accordingly (Elsayed et al., 2010).

We develop participant evaluations, the program evaluation methodology, data collection method, and reporting formats that will be used to assess mastery of the tasks to be taught (Davis et al., 2013).

If possible, we conduct mini knowledge presentations to validate the program for meeting designated learning requirements.

Development Phase

Electronic learning or e-learning is a current way of developing education in line with technological breakthroughs. A concise definition of

e-learning can be ***the provision of education, training or learning by electronic means*** (Davis et al., 2013).

Nowadays, the term is also unifying for many learning techniques and computer-assisted instruction. E-learning refers to Internet technologies ***to provide a wide range of solutions that enhance the performance and knowledge of medical and pharmaceutical students*** (Davis et al., 2013, Piskurich, 2015).

In general, ***e-learning is synonymous with online education*** and web-established knowledge.

In a broad sense, learning/online technology refers to applying scientific findings to solve practical problems. In detail, it can appear stated that informational tech refers to the teacher's approach to using ***learning principles in a practical training situation***.

From our viewpoint, ***didactic technology is not limited to the use of technical means for the transmission of information***. However, it includes all the components of the teaching process in a single whole, removing certain artificial boundaries between them, insisting on the interdependence between content, theoretical information and practical information, and organisation, teacher-student relations, methods and procedures used.

The teacher-student relationship should be close, and there should be free discussion and exchange of opinions. A good teacher ***must know how to choose to make the teacher-student relationship as effective as possible*** in the career of future physiotherapists.

The teacher has to give the student confidence in his strengths, gain courage, make him engage in a communicative relationship, and succeed in engaging him in a constructive discussion. It is necessary to transmit to students a thirst for knowledge, for something new, a willingness and flexibility in thinking, and a desire to communicate (Davis et al., 2013, Okey, 1991).

The teacher must consider the students' opinions, wishes, aspirations and expectations, and personalities, and there must be free discussion and exchange of views.

The teacher's application of the modern principles suggested by contemporary psychology in teaching is an aspect of teaching technology to the same extent as learning machines, computers and other technical means.

Because of this, its renovation is addicted around the teacher's direct activity. Whatever modification is introduced, still the highly state-of-the-art technical means, its effectiveness depends not only on the change itself but also on how the teacher has exploited it by directing it following the objectives pursued (Davis et al., 2013).

In e-learning, classical teaching is enhanced with technology through the university teacher's access to different platforms, programs for the creation and education of online courses, access to information and web searches, video projectors for the most transparent and most concise presentation of information, through images, videos, diagrams or tables (Davis et al., 2013, Piskurich, 2015).

We believe that running digital courses should be a task done with care. After considering the learning objectives and pathway, the next step would be to choose the appropriate modality for the learning objective (Davis et al., 2013).

We have to prioritise the topics (Davis et al., 2013):

- The virtual live classroom should be used for discussions and practical skills sessions;
- E-learning courses or stimulus-response learning sites would be an excellent delivery method for terms and concepts;
- In the case of online courses, it is advisable to take into account the technological capabilities/limitations of learners' remote locations;
- For example, screenshots or an animated PDF would be more effective in delivering information to learners.

The following notes characterise e-learning methods (Davis et al., 2013):

- prioritises the development of learners' personalities, targeting the formative side of education;
- they are centered on the student's learning activity;
- they are action-centered, learning by discovery;
- are process-oriented;
- are flexible, encouraging cooperative learning and self-assessment in students, with assessment being formative;
- stimulate intrinsic motivation;
- the teacher-student relationship is democratic, based on respect and collaboration.

The advantages of this type of learning are the following: accessibility, flexibility, convenience, the user can decide for himself the date and time he engages in the learning activity. Compared to the traditional learning system, e-learning has many advantages (Piskurich, 2015; Okey, 1991; Ng, 2014):

- Geographical independence, mobility - the possibility to access the content of the educational material from anywhere and anytime with the help of a personal computer and network;

- Online accessibility - an important feature specific to this type of education, by which is meant access to education via the Internet in real-time, from anywhere and anytime, 24 hours a day, seven days a week; there is no time dependency;
- Concise and selective presentation of educational content;
- Individualisation of the learning process - each learner has their own pace and style of assimilation and relies on a particular type of memory in the learning process (auditory or visual); learning can be done gradually and repeatedly, with rapid progress being monitored and immediate and continuous feedback; some subjects perform better at weekends, others in the early hours of the morning;
- Diverse pedagogical methods - e-learning programs should be based on various pedagogical approaches, guiding learners throughout the learning process: from the completion of learning materials to the completion of projects, to online assessment, to certification, if applicable; several experiments studying the effect of using different media on learning have concluded that, in general, 80% of diverse learning material is retained through listening, viewing and interactivity;

General aspects of e-Learning

- Online administration - the use of e-learning systems requires ensuring user security, user registration, student monitoring and monitoring of network services;
- Low distribution costs - educational software or e-learning solutions are not cheap. However, their prices are lower than those involved in a 'traditional' learning session, as travel costs, rental, of course, premises, accommodation and meals for the subjects are eliminated;
- Reduced study time - in some cases, depending on the technical solution adopted, time can also be counted as a cost-saving: the subject will not interrupt their professional activity to attend a course but will "lose" only a few hours a day to learn online or offline on the computer; - Synchronous and asynchronous interactions - the two types of exchanges between instructors and trainees can complement each other;
- Diverse, dynamic technologies - these allow for robust and real-time feedback and formative and summative, qualitative and quantitative assessments, carried out quickly and by the most knowledgeable assessors;
- Whereas traditional education is organised by age group, the subject is organised in online education; a virtual classroom can bring together subjects of all ages and backgrounds, regardless of spatial boundaries (Khadjooi et al., 2011).

1. *Disadvantages of e-learning are:* (Buscombe, 2013; Condell & Elliott, 1989)

- The high dropout rate of students - this type of distance education requires consistent and sustained efforts from all participants in the instructional process. Students need to be highly motivated; otherwise, the dropout phenomenon is more common in distance education than in traditional education.
- Several factors can influence dropout, and that can be exploited to limit this trend: - presence - the tutor and the student must be present even in a virtual community; - equality - this must be manifested in that the tutor will moderate the activity so that all participants have the opportunity to intervene in a particular topic of discussion; - most minor possible working groups - allowing a better division of tasks and activities; - teaching style and degree of knowledge acquisition is an essential factor. This means using online course formats specific to this type of education and adapted to the knowledge of the subjects.
- Requires experience in computer use - learners must have some IT knowledge. In most cases, installing an e-learning system requires the installation of additional applications or environments that require other technical knowledge. To minimise this disadvantage, the client can use a web browser. There are cases where this approach is not possible. In this case, it is necessary to modularise the application to produce an installation kit and a user guide. If the system has many, not modularised functions, the user is reluctant to use them, consequently reducing its efficiency.
- High design and maintenance costs include expenditure on technology, network transmission of information, equipment maintenance, and necessary materials production. However, with all the costs involved in the traditional educational process, these are much lower (Miner et al., 2015).

General aspects of online:

Despite these disadvantages or limitations, the experience of already functioning e-learning platforms has shown that learners in education through new e-learning technologies quickly become familiar with the virtual environment and relatively promptly get into the natural rhythm of transmitting and acquiring knowledge through this modern, efficient type of education.

The development phase is ***the actual production and assembly of the materials that have been developed in the design phase*** (Miner et al., 2015).

At this point, it is essential to include whoever is responsible for the items, timelines and deadlines. All audio, video and course materials are collected, prepared, created, and ready for testing in this phase (Miner et al., 2015).

At this stage, we need to consider the following:

- List the activities that will help the target audience learn the task.
- Select the most appropriate teaching method for the learning group.
- Develop training aids and training courses.
- Corroborate the information and display to guarantee that it meets all the aims and objectives.
- Develop instructor guides, learning guides, tools and resources for participants.
- Prepare trainers and mentors who will assist with the training (Belfield, 2010).

Implementation Phase

The implementation phase is ***the stage where the developed course is put into practice, and the final product, developed based on the needs and errors discovered during testing, is presented to the target audience*** (Belfield, 2010).

Relying on the dimension of the readership and the quantity of time and resources allocated to this process, the following considerations should be taken into account the day before or the morning of the presentation day:

- Preparation of the delivery platform.
- The learning environment, i.e., the platform, should be prepared before the learners are connected.
- Ensure the Web connectivity is active and functional.
- Completion of the training session (Gustafson & Branch, 2002).

Evaluation Phase

The evaluation phase ***evaluates suggestion from the students***. The suggestion collected in this phase measures feedback, identifies what works and does not work, ascertains the efficaciousness and attribute of distribution, and is developed to adjust the program (Reason, 1997).

It substantiates whether or not the curriculum has encountered its goals and the argument of the education information used (Reason, 1997).

It discovers whether learning went as planned and can also uncover any obstacles that may have occurred.

Some or every one of the audience must be featured in the evaluation:

- Where are the information and message presented clearly and understandably?
- Were the examples, illustrations and demonstrations practical?
- Was the information presented personally relevant to the learner?
- Was the training exciting and, particularly meaningfully, encouraging?
- How performed the guidance influence the learner? If quite, in whatever way? If not, how come not?
- What changes should be made?
- What was the most critical aspect of the information showcased to the learner? What appear the least significant?
- What changes, modifications, or adjustments would the learner make?
- Collect evaluations, and review program data;
- A decent assessment of project outcomes at this argument might succumb affluence of data which can be utilized to refine and ensure the success of future presentations (Reason, 1997; Briggs, 1975).

ONLINE LEARNING

Today, digital information can be found almost anywhere and is accessible to almost everyone. In this age of information technology, medical education now faces new challenges. The online explosion of healthcare information forces students to update their knowledge constantly (Battles & Mandle, 1986). Medical technology informatics competency requirements, such as electronic medical records, learning systems, and assisted diagnosis systems, present a new challenge for medical students (Battles et al., 1989; Triola et al., 2010)

The teaching methods used to educate and train students should be continuously optimised to prepare qualified individuals for today's environment where the Internet provides ubiquitous digital information. Despite the truth that this form of information technology has already been used to support instruction, traditional teaching methods require that teaching and learning coincide. Because of moment and corridor constraints, online learning separates teaching and learning via internet-based information delivery systems. In higher education, both digital and offline instruction methods are widely used (Thompson, 2013; Daniel, 2012; Cook et al., 2008).

Many factors influence the efficaciousness of electronic education. Some elements create barriers to online learning, such as administrative issues, social interaction, academic skills, technical skills, learner motivation, study time and support, technical issues, costs, and internet access (Bartley & Golek. 2004, Mayer, 2002).

Over a previous couple of months, because of the bottlenecks caused by COVID-19 worldwide, society has faced significant challenges that have inevitably affected education. Online learning has gained ground, and ***communication technologies have become indispensable for maintaining continuity in schools and work areas***. As significantly as the discipline of education is concerned, these rapid and perhaps unexpected changes could have created several difficulties in ensuring the effectiveness of both teachers and students (Hasan & Bao, 2020; Rapanta et al., 2020).

Online environments for teaching and learning ***can be effective***, but ***only when the conditions are known under which teachers can successfully proceed with education***. Motivation is the psychological mechanism that activates how a teacher acts. It is an external or internal determinant of their behaviour and the actions of other regulatory agencies. The outcome of all motivational dimensions will affect any professional activity in a specific way (Hasan & Bao, 2020; Rapanta et al., 2020).

In the circumstance of online education, primary consideration has appeared reimbursed to the behaviour of continued use. Therefore, it is recognised that many variables affect the adoption and long-term use of online learning (Bhattacherjee et al., 2008).

THE *ADDIE* MODEL ADAPTED TO E-LEARNING

In just a few years, online teaching has evolved from an academic experiment conducted by a few instructors to an alternative learning method. Even traditional classrooms have embraced many teaching methods popularised by online education, such as incorporating and completing online quizzes and discussion forums. ***A successful online education must be based on the proper training of both teachers and students using well-defined models*** (Dağhan & Akkoyunlu, 2016; Collins, 2004).

The ADDIE model is ***a generic training model that provides an organised process for developing learning materials***. This systemic model is a five-step cyclic program that can be used for the successful delivery of online learning (Collins, 2004)

The course ***objectives are studied in the analysis phase, gaps are examined, and the audience is identified***. This is an important step; however,

the teacher should first recognise that the Internet has changed student expectations (Dağhan & Akkoyunlu 2016).

These student expectations include increased levels of feedback, increased attention, and additional resources to help them learn. In reaction to fulfill these expectations, alternative teaching and course facilitation methods possess developed to endorse student bonding and encourages learning. For better student learning in the online environment, increased communication between instructor and student is necessary (Dağhan & Akkoyunlu, 2016; Collins, 2004)

These changes in student expectations should be incorporated, as well as the following assumptions, if applicable to the online course:

- The course is conducted online over a regularly held semester or quarter class or a set number of weeks.
- The course is divided into learning modules or chunks of content.
- Student participation is required within a set period - each content module is given a start and end date.
- Learning occurs as students synthesise the prepared material and interact in class discussions with the rest of their peers and teachers.
- With dimensions like these in location, the following stage is the design and development of course materials (Dağhan & Akkoyunlu, 2016; Collins, 2004)

Online teaching ***requires significant planning and preparation in the design and development phase*** and should not be underestimated as it can obstruct the education procedure. The syllabus is the heart of the design phase; ***careful preparation of the syllabus prepares the learning environment*** and discourages confusion and miscommunication. In the implementation phase, students are trained so that all the information gained in this critical stage helps improve the course (Grant, 2013).

CONCLUSIONS

1. Given the current situation, online learning and digitisation of information seem to be the best solution for transmitting data, and there are various methods for online learning.

2. However, online education is not as effective as classical education in terms of the interaction between teacher and student or between students, which is not as effective but using specific methods, and models appeared, digitization of information will become an optimal means of transmitting information and learning.

3. To make e-learning effective in such difficult times, we need to focus on more efficient use of technology, i.e., using that technology that has minimal acquisition and maintenance costs but can effectively facilitate educational processes. Before introducing and adopting any e-learning tool or technology, its advantages and disadvantages must be weighed up.

4. It must be recognised that e-learning has advantages for enhancing student learning and should be considered a potential teaching method in medical education. The design principles of digital learning materials, learning objectives, and students' preferences and characteristics should all be rigorously evaluated to ensure the effectiveness of online learning.

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