A new decade for social changes
Cognitive Skills of Employees from the Pharmaceutical Field

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Abstract. Over time, the specialised literature had an increased interest regarding the study of intelligence, cognitive abilities, and about the way these two abilities correlate amongst them. A sample of 63 pharmacists, aged between 25 and 45 years old, from Constanta County, was assessed with the cognitive skills tests from Cognitrom Assessment System (CAS++). Our study aimed at (1) identifying the level of cognitive skills that employees in the pharmaceutical field have; (2) identifying differences according to age in terms of cognitive abilities; and (3) identifying the relationships between cognitive abilities. One set of hypotheses assumed relationships between inductive analytical reasoning and analogical transfer, and between vocabulary and analogical transfer. Another set of hypotheses assumed the existence of differences between young pharmacists and adult pharmacists regarding analogical verbal transfer, decision-making capacity, inductive analytical reasoning, syntax, and vocabulary-synonyms. Results confirmed the correlational hypotheses and the difference regarding the vocabulary-synonyms variable but infirmed all the other hypotheses. Results are discussed in the context of the importance of cognitive skills for the pharmaceutical field, especially in the COVID-19 pandemic context.

Keywords. Cognitive skills, employees, pharmaceutical field.

1. A conceptual framework of cognitive skills
Zlate (2000) defines skills as a set of instrumental-operational characteristics that differ from individual to individual in terms of how they perform different activities and more than that, in terms of qualitative and quantitative performance. of them. According to Popescu-Neveanu (1977), skills are achieved through psychic processes that constitute a general psychological explanation of them through their functionality.

For some authors, skills represent the qualities or qualities of a person that make him fit to perform a form of activity successfully, while for Pieron (1973, p.32), skills represent ”the congenital substrate of a capacity, which will depend on the development natural aptitude, possibly educational training, and exercise. Alone, the ability can be evaluated, the aptitude being a virtuality”.

Crașovan and Vucea-Macsinga (1999) define skills as a complex of individual psychic traits and processes, which are uniquely structured and allow for different activities. These structures are closely linked to performance and efficiency. At the same time, they represent the instrumental-operational side of the personality, which allows the easy accomplishment of different forms of activities.
If we try to define the skills from the perspective of the product or by reference to the purpose of their operation, we notice that the emphasis is on efficient behavior and performance. Thus, the authors of the definitions below consider the speed and ease with which the individual carries out the activity, but also the quality and quantity of the activities that he carries out. For M. Golu and A. Dicu (1972) having skills means that the person solves a category of tasks at optimal performance indices, usually above the general average of the population. Also, Andrews (1952) believed that the individual trained and placed in favorable conditions, manages through skills to achieve a certain performance and even to improve it. Another point of view is that of N. Mitrofan (1988) who considers that skills are complex psychological formations of the personality that facilitate the performance of certain types of activities, with results above the population average.

As we can see, there is no clear and universally valid definition of the notion of fitness. Moreover, this attempt to define skills is quite controversial because it has many ambiguities in terms of terminology.

According to Mielu Zlate (2000), cognitive abilities represent a complex of processes and individual psychic qualities, structured in an original way, which allows the successful performance of certain activities.

Cognitive ability, sometimes called general intelligence, is essential for human adaptation and survival. It includes the ability to reason, plan, solve problems, think abstractly, understand complex ideas, learn quickly, and learn from experience (Plomin, 1999). An individual's cognitive ability provides the foundation for his or her innovative abilities. Such cognitive skills include intelligence, perseverance, creative thinking, and even pattern recognition. Cognitive ability refers to the functioning that is usually considered to be a person's mental faculties.

In general, the greater the cognitive abilities of an individual, the more capable a person is of developing innovations and implementing innovations from other sources. Leonardo da Vinci and Michaelangelo are probably examples of strong cognitive skills related to great innovations. People with certain personality types have proven to be more innovative, which is why individuals with a more creative personality tend to be even more innovative. The characteristics that predispose to innovation include openness to new ideas, perseverance, self-confidence, tolerance of ambiguity, independence, and originality. There are also personality traits that reduce a person's penchant for innovation. These include authoritarianism and rulemaking (Mayfield, 2011).

General cognitive ability has a normal distribution in the population, from a low level of mild mental disability to a high level of gifted people. Various measures of cognitive abilities, such as spatial ability, verbal ability, speed of information processing and memory, are substantially correlated with each other, and general cognitive ability (g) is what these various measures have in common. Clearly, there is more to knowledge than general cognitive ability. Although general cognitive ability explains about 40% of the variance between such tests, most of the variance of a particular test is independent of general cognitive ability (Plomin, 1999).

2. Occupational profile of an employee in the pharmaceutical field
According to the Romanian language dictionary, the pharmacist is defined as a qualified person who deals with the preparation, control, distribution, or sale of medicines (Romanian Language Explanatory Dictionary, 2009). In a medical dictionary, a pharmacist is a person authorized to prepare, prepare, and dispense prescription drugs from a licensed physician or dentist. A pharmacist is a health care professional who cooperates, consults, and consults with licensed
Despite their professional diversity, researchers and pharmaceutical officials agree that pharmacists perform several tasks while at work. The main tasks of pharmacists are:

- One of the most important tasks that the pharmacist performs daily is to analyze the prescriptions prescribed by the doctor, to check the active substances, the prescribed doses, and then the preparation of these drugs.
- Provide advice to patients and other healthcare professionals on how to use or administer medicines, the correct dose of a medicine, and potential side effects. In addition, it can be ensured that a drug will not interact unfavorably with other drugs that the patient is taking.
- Analysis of long-term treatment of patients and, where appropriate, adjustment of treatment to prevent overdose. If necessary, additional, or alternative treatments may be suggested that the patient should consider, such as dietary changes and exercise to help alleviate the condition.
- Advise patients on the optimal storage of medicines, possible side effects and dosing of medicines. Furthermore, the pharmacist should be informed about side effects and interactions with other medicines, foods, alcohol, and other beverages such as grapefruit juice.
- Counseling includes instructing patients on how and when to take doses, following up on medications, exchanging advice on how to minimize side effects, while maximizing benefits, and listening to all patient concerns.
- Collaborate with physicians and other health care professionals to monitor, analyze, and evaluate how effective treatment regimens are, providing information about drug characteristics and how to administer them (Malone, 2018).
- Periodically check the shelf life of medicines to withdraw those medicines that are expiring.
- Marketing and ordering of pharmaceutical and medical supplies, taking into account the appropriate storage location and handling.
- Preparation and delivery of medicines in accordance with the doctor's prescription, measuring, weighing, and mixing the medicinal substances.
- Receiving, maintaining control of narcotic, radioactive, poisonous, or high-risk circuits.
- Participating in health promotion and disease prevention activities also has the role of instructing people in the use of blood glucose or blood pressure monitoring equipment.
- Where appropriate, pharmacists are tasked with directing patients to specialized physicians and to hospitals or other medical facilities (Wiedenmayer, Summers, Mackie, Gous & Everard, 2006).

Pharmacists usually work in clean, well-lit, and well-ventilated rooms. Many pharmacists spend most of their working day standing. When working with sterile or potentially hazardous pharmaceuticals, pharmacists wear gloves and masks and work with other special protective equipment, such as gowns and capes.

Many community pharmacies and hospital pharmacies are open full-time or non-stop, so pharmacists can work evenings, nights, weekends, and holidays. Consultant pharmacists can travel to health care facilities or other units to monitor patients’ drug therapy (U.S. Department of Labor, 2016).
The degree of danger to pharmaceutical workers depends on the type of pharmacy they work for and its location. Pharmacists can be employed in community pharmacies, or hospital pharmacies. Each of these presents different dangers that must be addressed to prevent injury (Welch, 2017).

**Biological hazards.** Contact with patients and the public exposes pharmacy staff to biological hazards, as do contaminants found in food, water, and ventilation. Workers’ immunization provides a first line of defense when interacting with patients. Other measures should also be implemented, including restricting access only to authorized personnel, implementing safe working procedures and the use of personal protective equipment, such as eye protection, gloves, and respiratory protection.

**Chemical hazards.** Community pharmacies produce medicines for patients whose medical needs cannot be met by commercially available medicines. Interaction with different types of chemicals puts pharmacists at risk, but there are measures that can be put in place to ensure their safety. Education is crucial, as is limiting exposure time and ensuring the safe disposal of substances. Pharmacies should have safe working procedures in case of spills and any other inconveniences involving harmful substances. In addition, pharmacists working with chemicals must wear appropriate protective clothing and equipment, including eye protection, face masks, gowns, and gloves.

**Ergonomic hazards.** A job in a pharmacy should allow workers to move freely and easily. In addition, the equipment required for the work, such as computers, should be adjusted accordingly. Providing placement options and designing shelves to facilitate access to medicines can also improve the health and safety of pharmacists. Pharmacists rely on computers to perform their tasks, so adjustments should be made to make them easy to use. For example, the screen brightness should be adjusted so that it does not affect your vision. In addition, the location and location should be considered. Non-slip materials should be used on floors to prevent slipping and falling. Adequate - but not bright - lighting should be provided for improved depth perception.

**Physical hazards.** Cutting is one of the most common injuries in the pharmacy. Sharp tools (medical instruments, scalpels, and scissors), broken glassware, equipment and the use of tools can all contribute to cuts. But these risks can be avoided, or at least minimized, by proper training of workers and the implementation of safe working procedures. After using any equipment or tool, it should be put back in a location where it will not cause any problems. Wearing protective clothing and equipment should also be required. Burns are another physical injury that pharmacists can experience, especially those who work with thermal insulators. Cables and electrical appliances are widely used in pharmacies, but they can also be dangerous. The correct location of circuits away from hazardous elements should be implemented, as should the grounding of circuits when used near water sources.

**Psychological dangers.** Long hours and overwork are problems that pharmacists face and can be remedied by changing management policies and procedures. Changes can also be made to the work environment, such as providing adjustable lighting, designing a workplace to improve vigilance, and establishing an appropriate thermal environment. Pharmacists may also be abused by customers or co-workers. Workers should be educated about awareness and avoidance of violence and know the procedures. Leadership should also address issues promptly (Welch, 2017).

To practice the profession of pharmacist, it is necessary to study higher education, namely graduating from a pharmacy faculty with a five-year study program. The pharmacist diploma must be obtained from an institution accredited by the Accreditation Board for Pharmaceutical
Education. Next, you need to enroll in the Romanian College of Pharmacists and obtain a membership certificate. This certificate is valid for the entire period of practicing the profession, according to the law in force (Law 95/2006). Pharmacists also need to take continuing education courses to keep up with the latest advances in pharmacological science.

The pharmacist must have knowledge in the following fields: chemistry, biology, anatomy, medicine, dentistry, Romanian language, mathematics, legislation, and counseling. Skills required to practice the profession include problem-solving skills, learning skills, or resource management skills.

Pharmaceutical employees must also have a medium to higher level of cognitive skills. In terms of general learning ability, they must have a higher level, as in the case of verbal aptitude or decision-making ability. According to the occupational profile, an average level of development should be in numerical, spatial aptitude, speed of reaction and civil service skills.

Verbal aptitude is very important for a pharmacist to carry out his profession successfully. Most of the time, the pharmacist needs to listen, ask questions, gather information from patients, understand written and spoken information, speak clearly so that listeners can understand, and therefore make sure that he is able to understand. operate with the meanings of words at a higher level. Frenzel and colleagues (2015) reported that pharmacy graduates should be able to provide patient consultation, use motivational interviewing techniques, and communicate verbally and in writing with patients and other health care providers.

The ability to make decisions is of increasing importance, and the pharmacist is subjected every day to situations in which he must make decisions. A pharmacist who provides beneficial services will make decisions that are geared toward creating benefits. A benefit-oriented service is one in which the pharmacist is the instigator of a treatment or intervention that has not been previously considered by another health care professional (Wright, Anakin & Duffull, 2018). A pharmacist providing primary care services will identify the need to decide and continue through the decision-making process in an independent and autonomous manner.

Inductive reasoning along with critical thinking are processes of intentional judgment, of self-regulation (Facione, 1990). The critical thinking process requires interpretation, analysis, evaluation, deduction, explanation, and self-regulation (Oderda, Zavod, Carter, Early, Joyner, Kirschenbaum, Mack, Traynor, & Plaza, 2010). Studies by Nornoo and co-workers (2017) on pharmacists have shown that they have achieved very good results in inductive reasoning, which we know makes inferences about what we believe to be true based on analogies, case studies, previous experience, statistical analyzes, simulations and recognized models in familiar objects, events, experiences, and behaviors (Nornoo et al., 2017).

3. Peculiarities in the pharmaceutical field during the COVID-19 pandemic

The COVID-19 pandemic has become one of the central health crises of a generation. The pandemic has affected people in all countries, continents, races, and socio-economic groups. Necessary measures, such as quarantining entire communities, closing schools, social isolation, and shelter orders, have suddenly changed in everyday life (Lai, Ma & Wang, 2020).

Healthcare professionals care for patients infected with the disease. The rapid spread of COVID-19 and the severity of the symptoms it can cause in a segment of infected people have sharply marked the limits of health care systems (Chen, Yang & Lien, 2020).

Severe acute respiratory syndrome caused by coronavirus 2 (SARS-CoV-2) was first identified in December 2019 in China. On March 11, 2020, the World Health Organization (WHO) declared the coronavirus disease epidemic (COVID-19) to be a global pandemic (WHO, 2020). The World Health Organization has called for swift action by governments and
societies to prepare for the pandemic, improving their emergency response systems, communicating risks, and educating the public about the means of protection. This decision has social, political, and economic consequences that are difficult to fully predict at this time, but its effect on health systems is already palpable (Jovičić-Bata, Pavločić, Milošević, Gavarić, Goločorbin-Kon, Todorović & Lalić-Popović, 2021).

The pandemic has strained global health systems to their limits (Adams & Walls, 2020), leading the public to turn to community pharmacists as the most accessible providers of primary care (Legido-Quigley, Asgari, Teo, Leung, Oshitani & Fukuda, 2020). Community pharmacies are often the first point of contact with the health system with enormous potential to relieve the burden of COVID-19 pandemics for other healthcare providers, allowing them to focus on more severe cases (Verelst, Kuylen & Beutels, 2020). In these difficult times, the importance of pharmacy staff as front-line health workers and their potential is beginning to be fully recognized by both the public and the health care system. The ongoing transformation of pharmacy from medicine-focused care to patient-centered care (Rosenthal, Breault, Austin & Tsuyuki, 2011) could be accelerated by the pandemic, but the effects of such rapid changes on the pharmaceutical workforce are unclear (Visacri, Figueiredo & de Mendonça Lima, 2020). The continuing threat of infection, along with changes in supply chains, workflows and routines, difficult customer behavior, congestion management, and social distancing in pharmacies have been shown to be potentially significant stressors (Austin & Gregory, 2021) with significant impact in increasing work-related stress (McNicholas, Sharma, Oconnor & Barrett, 2020) of pharmacy staff.

Batra, Singh, Sharma, Batra and Schvaneveldt (2020) reported higher levels of depression, suffering, and behavioral dysfunction among health care workers who had prolonged contact with patients. A strong statistical correlation was found between discomfort and specific symptoms and mental functions among pharmacists who participated in this study (Batra et al., 2020). The impact of the COVID-19 pandemic on mental health has been observed in more than 50% of pharmacists, and some studies have even shown higher rates of burnout among pharmacists compared to nurses and physicians (Johnston, O’Reilly, Cooper & Mitchell, 2020).

Another study by Lange, Joo, Couette, de Jaegher, Joly and Humbert (2020) showed that about 35% of pharmacists reported mental health disorders (anxiety, stress, insomnia, loss of control, fear, hopelessness, women being more affected. These results, from the first studies analyzing the psychological impact of the COVID-19 pandemic among community pharmacists in the French region of Normandy (Ardebili, Naserbakht, Bernstein, Alazmani-Noodeh, Hakimi & Ranjar, 2020), are not consistent with our results due to the different study period. The same results were obtained regarding the quality of life of young Romanian doctors during the COVID-19 pandemic, without any association between sex and suffering (Ungureanu, Vladut, Bende, Sandru, Tocia, Turcu-Stiolica, Groza, Balan & Turcu-Stiolica, 2020).

In addition, there are studies that argue that much older specialists and pharmacists in Romania could be characterized by better care capacity, emergency preparedness and likely mechanisms to cope with stress due to experience. Therefore, it was observed that Romanian pharmacists reported a better quality of life, while Bulgarian pharmacists reported more sleep disorders, suffering and depression. Statistical correlations showed that Bulgarian pharmacists had more difficulty coping with routine activities, also underlining the burden of the pandemic (Turcu-Stiolica, Bogdan, Subtirelu, Meca, Taerel, Iaru, Kamusheva & Petrova, 2021).
4. Objectives and hypotheses
The main objectives of our study are: (1) identifying the level of cognitive skills that employees in the pharmaceutical field have; (2) identifying differences according to age in terms of cognitive abilities; (3) identifying the relationships between cognitive abilities.

The hypotheses are:

- **H1** - It is assumed that there is a correlation between inductive analytical reasoning and analogical transfer.
- **H2** - It is assumed that there is a correlation between vocabulary and analogical transfer.
- **H3** - It is assumed that there is a difference between young people and adults in terms of analogical verbal transfer.
- **H4** - It is assumed that there is a difference between young people and adults in terms of decision-making capacity.
- **H5** - It is assumed that there is a difference between young people and adults in terms of inductive analytical reasoning.
- **H6** - It is assumed that there is a difference between young people and adults in terms of syntax.
- **H7** - It is assumed that there is a difference between young people and adults in terms of vocabulary.

5. Sample and instruments
A total of 63 respondents participated in this research, of which 58 are women and 5 are men. The study was attended by people aged between 20 and 45 years, who come from all categories and social backgrounds, with the profession of pharmacist and pharmacy assistant. The sample was divided according to age criterion in young pharmacists (25-35 years old, namely 33 people) and adults (35-45 years old, namely 30 people). Our subjects are from Constanta County, living in both urban and rural areas. We used a convenience sample, and we collected the data in March 2021-September 2021. All subjects have given their consent to participate in this research and confidentiality of the results was ensured.

Five surveys from Cognitrom Assessment System (CAS++) have been used: analogical transfer, inductive analytical reasoning, decision-making skills, vocabulary-synonym, and syntax test. All tests are standardized and adapted for Romanian population.

6. Findings and results
**H1**: It is assumed that there is a correlation between inductive analytical reasoning and analog transfer.

To verify the hypothesis, we calculated the normality of the data using the Kolmogorov-Smirnov normality coefficient. The results are shown in the table below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Kolmogorov-Smirnov</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
</tr>
<tr>
<td>Analogical transfer</td>
<td>.125</td>
</tr>
</tbody>
</table>


In the normality test we obtained the significance threshold of .016 for verbal analogical transfer and .031 for inductive analytical reasoning, which indicates that we will use a nonparametric method. Results are shown in the table below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation Coefficient</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal analogical transfer</td>
<td>.308*</td>
<td>.014</td>
</tr>
<tr>
<td>Inductive reasoning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the analysis of the results presented in Table 2, our hypothesis is confirmed, at a significant threshold p=0.005.

**H2.** It is assumed that there is a correlation between vocabulary and analogical transfer. To verify the hypothesis, we calculated the normality of the data using the Kolmogorov-Smirnov normality coefficient. The results are shown in the table below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Kolmogorov-Smirnov</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
</tr>
<tr>
<td>Verbal analogical transfer</td>
<td>.125</td>
</tr>
<tr>
<td>Vocabulary - synonyms</td>
<td>.116</td>
</tr>
</tbody>
</table>

The analysis of normality coefficient shows an abnormal distribution of the participants' answers to the research, which leads us to apply a non-parametric method of verifying the hypothesis. Results are shown in the table below:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation Coefficient</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal analogical transfer</td>
<td>.374**</td>
<td>.003</td>
</tr>
<tr>
<td>Vocabulary - synonyms</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The analysis of the table above shows the confirmation of the hypothesis, at a significant threshold $p=0.001$.

**Hypotheses from 3 to 7** assumed the existence of a difference between young people and adults in terms of analogical verbal transfer, decision-making capacity, inductive analytical reasoning, syntax, and vocabulary. We obtained a normal distribution of scores for verbal analogical transfer and for inductive reasoning, thus a parametric comparison coefficient was used. For the other variables we used Mann-Whitney U Test. The next synthesizing table shows the results:

**Table 5. Comparison coefficients.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>N</th>
<th>T-test</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analogical verbal transfer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Youth</td>
<td>7.64</td>
<td>33</td>
<td>.054</td>
<td>.957</td>
</tr>
<tr>
<td>Adults</td>
<td>7.67</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inductive reasoning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Youth</td>
<td>8.21</td>
<td>33</td>
<td>.361</td>
<td>.718</td>
</tr>
<tr>
<td>Adults</td>
<td>8.03</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>N</th>
<th>Mann-Whitney</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision-making capacity</td>
<td></td>
<td></td>
<td>417.500</td>
<td>.278</td>
</tr>
<tr>
<td>Youth</td>
<td>29.65</td>
<td>33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>34.58</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary - syntax</td>
<td></td>
<td></td>
<td>485.000</td>
<td>.888</td>
</tr>
<tr>
<td>Youth</td>
<td>31.70</td>
<td>33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>32.33</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vocabulary - synonyms</td>
<td></td>
<td></td>
<td>338.000</td>
<td>.029</td>
</tr>
<tr>
<td>Youth</td>
<td>27.24</td>
<td>33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>37.23</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the results show in table 4 we can see that significant differences were obtained only for vocabulary-synonyms, thus only H7 was statistically confirmed.

**7. Discussion**

A person who performs well on the analogical transfer can operate with information that he can transfer to new situations. Also, a person who achieves good results in inductive analytical reasoning, can produce a series of general knowledge based on data.

Inductive analytical reasoning along with critical thinking are processes of intentional judgment, self-regulation (Facione, 1990), and the process of critical thinking requires interpretation, analysis, evaluation, deduction, explanation, and self-regulation (Oderda et al., 2010). Studies on pharmacists have shown that they have achieved very good results in inductive analytical reasoning, which we know makes inferences about what the individual thinks is true based on analogies, case studies, experience, previous statistical analyses, simulations, and models recognized in familiar objects, events, experiences, and behaviours (Nornoo et al., 2017).

Analogical transfer refers to those processes that offer the possibility of solving new problems, based on the similarity with already solved problems. Various studies have shown that inductive reasoning is correlated with a wide variety of higher-order cognitive skills and processes, including analogical transfer (Pellegrino and Glaser, 1982), problem solving...
(Richland and Burchinal, 2012), general intelligence (Klauer and Phye, 2008) and the application of knowledge and skills (Goswami, 2012). Inductive reasoning is considered to play a central role in cognitive development (Klauer and Phye, 2008) and develops significantly throughout childhood (Leech, Mareschal, & Cooper, 2008). In conclusion, our first hypothesis is also validated by the scientific literature.

The second hypothesis showed a correlation between analytic inductive reasoning and analogical transfer. Several researchers have noted the link between analogical and vocabulary transfer. Greenwood (1988) states that vocabulary enrichment using analogical transfer is a very effective method. Analogies involve analysing the correspondence between things that might otherwise be constructed differently. Analogies are ideal for vocabulary development because they carry a built-in context that requires some mental gymnastics exercises.

As presented above, an analogy is a way of stating a comparative relationship between two sets of terms. A and B (from the first set) are related to each other in the same way that C and D (from the second set) are related to each other. On the other hand, the vocabulary test measures the skills and how a person manages to operate on the meaning of words.

Incomplete analogies are often included in standardized tests because their correct completion is considered evidence of high-level thinking. Studying and creating analogies helps individuals to develop their vocabulary and concepts as their reasoning and critical thinking skills improve (Hyerle, 2000). Analogies are useful in various areas of activity to enhance the learning of new vocabulary concepts (Dawson & Venville, 2008).

The third hypothesis was infirmed, with no significant differences between young pharmacists and adult pharmacists, the means we obtained being almost the same. Transference is a very important cognitive mechanism, which the individual uses to assimilate new knowledge and to be able to generate conclusions. Depending on a person's ability to identify information already in memory, he or she can assimilate new information more easily (Vosniadou & Ortony, 1989). Therefore, the notion of analogical transfer includes all the processes that make it possible to solve new problems, based on the similarity with the already solved problems (Singley & Anderson, 1989). Another study belonging to Heidrich and Denney (1994), conducted on people aged 24 to 93 showed that values for analogue transfer between young people and adults do not differ. However, performance decreases slightly after the age of 50.

As we know, analogical transfer is closely linked to the ability to solve problems. Solving problems that are perceived differently but require similar solutions is a key skill in everyday life. In adults, this ability is based on memories of relevant past experiences that partially overlap with the present task to be solved. Thanks to this long-term memory support, analogical transfer allows for remarkable behavioural flexibility beyond immediate situations (Bobrowicz, Lindström, Lindblom Lovén & Psouni, 2020). However, not much is known about the interaction between long-term memory and developing analog transfer, as it has so far been studied separately. Instead, Crisafi and Brown (1986) studied the problem in children aged 2 to 5 years and found that between the second and fourth year of life, children quickly develop the ability to solve problems. This ability in adults is enhanced by long-term memory, which is well developed and allows for transfer in both immediate and delayed situations (Bobrowicz et al., 2020).

One reason for maximum performance during middle age to solve problems may be that adults have the ideal balance of fluid and crystallized intelligence resources needed to solve problems. Crystallized intelligence is the experience gained and is usually measured by
vocabulary and general knowledge. This performance does not decrease, on the contrary, it can even increase slightly until late adulthood (Ackerman, 1996).

The fourth hypothesis showed no significant difference between young pharmacists and adult pharmacists regarding decisional skills. Decision making in pharmacy practice can be conceptualized as a series of processes and cognitive skills that allow pharmacists to make patient-centered therapeutic decisions. For this definition to be applicable in all practice units, in any environment where a pharmacist must provide the patient with clinical services, whether in the community, primary care or hospital practice. In medical practice, clinical decision making is used synonymously with the term "clinical reasoning" and is characterized as the thought process that medical practitioners use to sort out a set of characteristics presented by a patient and then accurately assign a diagnosis. afferent (Eva, 2005). Clinical decision making in medicine focuses largely on diagnosis rather than therapeutics. Pharmacists, on the other hand, usually interact with patients and health care teams in a setting where the diagnosis has been made, but where treatment options may not be optimal.

Studies that have looked at age differences in decision-making have not come to a conclusive answer but have looked at several issues. The research of Tymula, Rosenberg Belmaker, Ruderman, Glimcher and Levy (2013) showed that since people after the age of 50 begin to lose their capacity for cognitive functions, they also recorded a significant decrease in the rationality of choices, therefore, decision-making capacity is also affected.

Kovalchik, Camerer, Grether, Plott and Allman (2005) concluded that the decision-making performance of adults and young people is comparable, in the sense that adults are sometimes less biased and subjective than young people, but no other differences were found between adults and young people. young people and adults in terms of their ability to make decisions.

In conclusion, our hypothesis that there are no significant differences between young people and adults in terms of decision-making capacity, is also supported by specialized studies in the field, and our research complements the already existing information.

The fifth hypothesis shows no difference regarding inductive reasoning between young pharmacists and adult pharmacists. Inductive analytical reasoning indicates the performance that a person has in producing new information by combining existing information and discovering rules that he will use in solving problems.

To understand how this type of reasoning varies with age, it is essential to study how it develops from an early age. Schulz, Goodman, Tenenbaum and Jenkins (2008) conducted studies involving 4-year-olds and found that from this age they can recognize when inductive reasoning rules are violated. In other words, the development of reasoning begins in childhood, continuing through adolescence.

Compared to adults, children have less basic knowledge about the world and therefore have a reduced ability to understand the rules governing inductive reasoning (Krawczyk, 2017). Children are constantly faced with the task of making inferences based on their past and past observations. Gentner (1988), for example, suggests that young children are strongly influenced by the similarity between the surface characteristics of the basic elements, but become more sensitive to the importance of the relationships between the elements as they get older. This developmental change is called relational change.

The results obtained by other authors did not show differences between young people and adults because in these periods of development, there is the ideal balance between fluid intelligence and crystallized intelligence. As we know, fluid intelligence refers to the ability to solve new problems, to use logic, to recognize patterns without resorting to existing knowledge,
while crystallized intelligence uses knowledge previously acquired through education and experience.

The sixth hypothesis showed no significant difference regarding syntax between young pharmacists and adult pharmacists. Syntactic processing is considered a process that operates automatically (Frazier, 1987) as an "interpretive" process that has been claimed to be immune to the effects of aging (Caplan & Waters, 1999). As an example of a modular system, the parser is considered to work quickly and automatically to calculate the linguistic form of the statement. Some studies show that this calculation of syntactic structure is not affected by semantic constraints (Ferreira & Clifton, 1986). Our hypothesis that there are no differences between young people and adults in terms of syntax is supported by numerous specialized studies, and we complement them.

The last hypothesis found differences regarding vocabulary-synonyms, between young pharmacists and adult pharmacists, with higher performances from the adults. This result can be explained by the fact that adults generally have better vocabulary knowledge than young people (Kausler, 1991).

Several studies by Daneman and Green (1986) have shown that there are two components that are involved in vocabulary development. The first component is the basic knowledge of vocabulary that the person has, and the second component is working memory (Baddeley, 1983). To the extent that existing vocabulary knowledge is more robust, adults easily accumulate new vocabulary because they generally have better vocabulary knowledge than young people (Laumann Long & Shaw, 2000).

Other studies have shown that while some cognitive functions decrease with age, vocabulary and other types of crystallized intelligence are stable or improve throughout life (Salthouse, 2014). Acquiring lifelong knowledge leads to a richer and more interconnected network of conceptual semantic information that could lead to increases in age-related semantic interference. Another explanation could be that nowadays, young people spend less time reading than adults.

8. Limits of the research
This study also has some limits. First, the convenience sampling method that we used was not able to provide a representative sample. Thus, our results cannot be generalized to the entire population. Second, tests were applied either in the beginning of the working program, or at the end, thus a series of variables could not be controlled (fatigue, stress, morning-type subjects, evening-type subjects, etc.). All tests were time-bound, and this put a certain pressure over the respondents. It is possible that this pressure could have influenced their results.

We selected only a few dimensions of cognitive skills, due to the conditions of application of the tests that required face-to-face contact, and during the period of restrictions we encountered certain difficulties.

9. Conclusions
The results of our research showed the following:
- There is a relationship between analogical transfer and inductive reasoning,
- There is a relationship between analogical transfer and vocabulary,
- There is a significant difference between young and adult pharmacists regarding vocabulary-synonyms,
There are no significant differences regarding analogical verbal transfer, inductive reasoning, decision-making capacity and vocabulary – syntax.

Verbal aptitude is very important for a pharmacist to carry out his profession successfully. Most of the time, the pharmacist needs to listen, ask questions, gather information from patients, understand written and spoken information, speak clearly so that listeners can understand, and therefore make sure that he is able to understand. operate with the meanings of words at a higher level. The ability to make decisions is of increasing importance, and the pharmacist is subjected every day to situations in which he must make decisions. Inductive reasoning along with critical thinking are processes of intentional judgment, of self-regulation, which in turn are very important for employees in the pharmaceutical field to carry out their activity at a higher level.

References


