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Bullying and Protection: The Influence of Moral Disengagement

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ABSTRACT. Bullying is one of the most frequently discussed of social problems, which can be found in macro-, meso- or micro-communities, i.e. the family, public, higher education institutions or the workplace. Specialists increasingly put emphasis on the phenomenon of bullying, despite the fact that different types of bullying are prominent in the afore mentioned social institutions. The phenomenon can cause significant trauma to the victim, both psychologically and physically, which may lead to some form of isolation from society. However, the number of national and international studies on bullying in higher education is negligible. This study aims to answer the following questions: the relationship between victimisation and moral disengagement; if active defending and moral disengagement correlate; the type of correlation between active defending and victimisation; and gender differences from the perspective of active defending. The participants of the recent study were all Hungarian-speaking students of Babeş-Bolyai University. The research design applied in this study was a quantitative, correlational design.

The results of this research show that victimisation is positively correlated with moral disengagement. No relationship was found between moral disengagement and active defending. Victimisation and active defending were also positively correlated, and there is a significant difference between men and women when it comes to active defending.

The results of this research may be relevant for the implementation of various preventive and intervention programmes, for example the NAB IT! programme.

Keywords: active defending, student, moral disengagement, active bullying, victimisation

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1. INTRODUCTION

Bullying is a social problem that affects us all, and we have all been involved in some form of it - whether as a perpetrator, victim or as a bystander. This raises the question, what is the reason? Given there are now a number of intervention programmes embedded into numerous institutional systems. Even so, the phenomenon is still prevalent today and causes significant harm, such as exclusion from peer groups. Often leading to low self-esteem or even depression (Parker & Asher, 1987), but also physical illness, insomnia and poor academic performance or even dropping out of Higher Education altogether (Sharp, 1995). In very serious cases, bullying can lead to tragic outcomes such as self-harm or even suicide (Irinyi & Németh, 2016). It is questionable, however, if bullying is causing serious problems, why is it still so common in so many micro-, meso-, and macro-environments? Individual dispositional factors such as moral beliefs and moral disengagement can be significant factors in both bullying and in protective behaviour. In addition, the experience of abusive behaviour and/or victimisation can also lead some people to become the perpetrators, and in some cases may be both victims and perpetrators of bullying simultaneously (Malta et al., 2010). It is also important to note that in the case of bullying there are significant differences between different age groups, bullying occurs in different forms in different age groups. In this light, it is even more interesting that relatively little research focused on university students in particular has been conducted (Isaacs et al, 2008). In any case, it can be argued that bullying is a complex social problem with individual and environmental factors, and for which deeper understanding can be achieved by examining the different factors, thus increasingly effective intervention programmes can be developed and implemented.

1.1. The roots of bullying

Contemporary abuse first began to draw attention in Sweden in the 1960s and 1970s (Heinemann, 1969, 1972; Olweus, 1973a). “Bullying” was not a widely used term, initially the term ‘mobbing’ was used by P. P. Heinemann, a Swedish school doctor, in the context of inter-ethnic discrimination. Heinemann borrowed the term from the Austrian ethologist Konrad Lorenz (1963, 1968), in ethology, the term is used to describe the phenomenon where animals of the same species attack an individual of another species, which is usually larger and the natural enemy of the group. In his book, Lorenz (1963) used the term for when a class or a group of soldiers act together against a deviant individual. The term mobbing has also long been used in social psychology (Lindzey, 1954);

however, its use has also become somewhat widespread throughout English-speaking countries as 'a relatively large group of individuals who share a common goal'. A 'mob' is randomly formed, poorly organised and lasts only a short time. Social psychology differentiates multiple 'mobs' such as the aggressive mob and the fear-driven mob. The "mobs" members experienced intense emotions, while their actions and behaviour tended towards irrationality (Lindzey, 1954). The term 'bullying' was established in large part by Swedish researcher Dan Olweus, who criticised the term 'mobbing' for over-emphasising the fact that the phenomenon only occurs over a short period of time. He lacked empirical research on the subject of bullying, and in the early 1970s he carried out what is still regarded as one of the first systematic studies of the phenomenon 'peer bullying'. These findings were first published in Sweden in a book called "Whipping boys and bullies: research on bullying at school." (Olweus, 1973a). An expanded version of this book was published in the United States in 1978 under the title "Aggression in the Schools: Bullies and Whipping Boys" (Olweus, 1978). The main aim of the research was to gain a partial understanding of how the phenomenon works and to show empirical results that answered at least some of the key questions that have been at the heart of the Swedish debate.

His research and other subsequent work (Farrington, 1993) confirmed some of his earlier ideas about bullying, such as that members of a class community can vary widely in their levels of aggression, as well as varying in how stable they can be without any intervention, even over a number of years (Olweus, 1977, 1979).

Olweus's research has also shown that a relatively small proportion of the class community can be considered more active participants in bullying than others, who in many cases are not directly involved in the bullying or are only marginally involved (Olweus, 1993, 2001). The reports of those who have been bullied also show that in the majority of cases only a very narrow group of two or three students are the bullies (Olweus & Solberg, 2003). However, a significant group of bullies, 25-30%, report being bullied by a single student (Olweus & Solberg, 2003).

1.2. The phenomenon of bullying

Bullying, a subcategory of aggressive behaviour, is a common occurrence in children and adolescents in school contexts worldwide (Whitney & Smith, 1993). It is a complex social problem that can have serious negative consequences, both for the abuser and the victims (Salmivalli, 1999; Smith & Brain, 2000). The negative effects of bullying are well documented, not only in terms of the psychological harm suffered by the victims, but also for the children who are

involved. Research from around the world has shown that abusive behaviour is a predictor of later delinquency (Olweus, 1991; Pulkkinen & Pitkanen, 1993), and is associated with both internalising and externalising difficulties (Juvonen & Graham, 2001; Kaltiala-Heino et al., 2000; Swearer & Doll, 2001). Adolescents who are part of the maltreatment and have negative coping strategies may become depressed (Duan et al., 2020).

It can be defined as the asymmetry associated with age, gender or racial differences that one or more individuals exploit to abuse or humiliate another individual (Olweus, 1993). Temporal repetition is also an important aspect of bullying (Berger, 2007), along with the involvement of the bully and the target of the aggression. Some individuals can be both bully and victim, and thus categorised as bullying-victims (Malta et al., 2010). Broadly speaking, bullying can be direct or indirect (Lopes Neto, 2005). Direct bullying is more attention-grabbing, as it involves overt aggression, including verbal bullying, pushing or hitting, or other types of physical aggression. Indirect bullying includes spreading negative rumours or accusations about a person who is not present to defend themselves, or making indirect comments in the presence of the victim (Lopes Neto, A. A., 2005). Bullying: aggressive behavior among students.

Bullying is better understood as a social phenomenon rather than a psychiatric illness (Lopes Neto, 2005). However, research has shown bullying has a severe negative impact on academic performance (Webster-Stratton et al, 2008), with consequences that can extend into adulthood for both victims and bullies (Malta et al, 2010). There are a number of roles that bullying involves, including bully, victim and bystander (Evans et al., 2019). Bullies are perfectionists (Farrell & Vaillancourt, 2019), have high levels of extraversion (Kokkinos & Antoniadou, 2019), and like to dominate (Volk et al., 2018). Meanwhile, victims tend to be adolescents with low self-esteem and self-efficacy (Silva et al., 2019; Hutson et al., 2019), students who have low academic achievement (Li et al., 2019) and students who have low perceived social support (Shaheen et al., 2019). Finally, bystanders are individuals who become bystanders or supporters of the abusive behaviour by not making any effort to stop the perceived abuse (Coloroso, 2003). The presence of bystanders who do not help the victim can trigger a feeling from the bully that he or she is receiving support, which may be a reason to increase the intensity of the bullying.

In the early bullying period, victims are usually sad or angry (Hamid & Daulima, 2019) and experience more physical problems (do Nascimento Andrade & Alves, 2019). Long-term effects can lead to drug abuse (Baiden & Tadeo, 2019) and a decrease in victims' life satisfaction (Nozaki, 2019). Adding to this, bullying can make victims depressed, anxious and may also lead to other psychological symptoms (Li et al, 2019; Radoman et al., 2019). And for perpetrators, bullying can

lead to criminal behaviour, drug abuse (Sangalang et al., 2016), reduced empathy (Wilford et al., 2015) and increased aggressive behaviour (Evans et al., 2019).

Several factors are involved in bullying, including various personality factors such as low empathy, manipulative personality, high extraversion and an unfriendly disposition (Dåderman & Ragnestål-Impola, 2019). However, environmental factors such as low social class and low age group support are also influential (Shaw et al, 2019) and norm systems specific to social groups are significant background factors in the occurrence of bullying (Pouwels et al., 2019). The phenomenon of abuse is also influenced by factors within the family, such as low support within the family and authoritarian parenting (Duggins et al., 2016).

Although the research was initially aimed at mapping traditional bullying, it is now increasingly looking at the phenomenon of bullying in a more diverse and in-depth manner. Increasingly, workplace bullying is being addressed, with relevant work by Hoel, Rayner, and Cooper, (1999), while the emergence of the Internet and cyberspace has also brought cyberbullying into the spotlight.

Bullying can be divided into several categories, such as:

1. Physical aggression, which is committed by hitting, kicking, strangling, restraining or damaging the victim's property.

2. Verbal bullying, which occurs by threatening, insulting, abusing or humiliating the victim.

3. Social exclusion, which occurs by excluding or isolating the victim from the group.

4. Indirect bullying, which occurs through gossiping, spreading fake news or influencing the opinions of others in a negative direction (Dixon & Smith, 2011).

1.3. Bullying as a social problem

In the context of school bullying, Salmivalli (2010, 2014) has highlighted that it is a social phenomenon in which a number of roles are involved that go beyond the strict bully-bullied relationship and can be seen as a phenomenon within a broader range of age group dynamics. Salmivalli (2014) points out that bullying is considered a social phenomenon with a high frequency for the reason that usually bystanders are also present during bullying, whether online or offline. These bystanders tend to support the bully in the form of social reinforcement such as laughter, but also find it amusing to humiliate the victim. Bystanders thus reinforce the bully's behaviour, whether intentional or not, simply by witnessing the events. However, there may be several reasons why bystanders choose not to intervene when bullying occurs (Salmivalli, 2010).

First, bullies are often viewed positively by their peer group, so bystanders fear that if they intervene, they themselves may become victims. Second, bystanders' ignorance may also stem from the fact that if they see that no one intervenes to help the victim, it may give the impression that the majority supports the bullying. However, it is also important to note that bullies tend to target vulnerable people, those of low status within the age group, so this can also create an attitude that it would not be 'profitable' to intervene. According to Salmivalli (2014), bystanders have considerable power to prevent, or even stop the bullying, especially in terms of the fact that they generally do not feel that it is right to bully someone. In their research, Salmivalli and colleagues (1996) found that 17% of schoolchildren generally take an active role as bystanders. What these children had in common was that they had compassion for the victims and wanted to do something to support them. Salmivalli argues that it would probably be much more effective in curbing bullying if the focus was not on changing the behaviour of the bullies, but on making the group more supportive towards the victims.

From a socio-economic perspective, the perpetration of bullying and victimisation are intertwined, maintained and changed as a result of the ongoing, reciprocal and complex relationship between individuals and environmental factors (Hong & Espelange, 2012). A socio-economic perspective highlights how abuse is rooted in four interrelated systems, namely micro-, meso-, exo-, and macro environments (Bronfenbrenner, 1979).

The difference between bystander intervention and the "Bystander effect": Bystander intervention is not the same as the "bystander effect". In bystander intervention, there is a bystander who becomes an upstander in necessary situations. The "bystander effect" refers to the psychological phenomenon where individuals are less likely to help or intervene due to the ambiguity of the situation, the paralysing effect (distribution of responsibility) of other bystanders present, and the social influence of others' inaction (Henson et al., 2020; Madden & Loh, 2020; Jenkins & Nickerson, 2019).

1.4. The relationship between abuse and morality

Arsenio and Lemerise (2004) speculated on how morality might be related to different forms of aggression. They concluded that it is most strongly associated with instrumental aggression, which could be seen as a synonym for bullying, a type of aggression where aggression is not an emotional response such as anger, but is a behaviour of the individual to obtain a reward. This is consistent with Crick et al's 2002 study in which they found that young people categorised as

aggressive are more likely to engage in a more hostile form of behaviour and to put aggressive responses in a positive light. Conversely, children who prefer prosocial behaviours are more likely to adapt to achieve their relational goals (e.g., to be my friend) as opposed to their instrumental goals.

However, Arsenio and Lemerise (2004) point out that the complexity of the relationship between moral justification and proactive aggression is hard to define, and in many cases the mechanism is paradoxical. Other findings indicate that although many aggressive children show signs of deficits in the area of social information processing (Crick & Dodge ,1999) other findings, in contrast, suggest that the bully may in many cases be characterised by sophisticated social expression and high social intelligence (Sutton et al., 1999). Thus, the social and cognitive roots of the nature of bullying remain hidden.

In 1999, Schonert and Reichl examined the relationship between moral justification and bullying in 108 Canadian elementary school students and found significant differences between boys and girls. For girls, no significant relationship was found between aggressive behaviour towards peers and morality. In contrast, for boys, a significant and positive relationship was found between moral justification and peer aggression, with those who applied moral justification more effectively being more aggressive. The explanation for this contradictory finding was found by Schonert and Reichl to be that boys may seek to justify aggressive behaviour and find it acceptable if it is done for the 'right' reason. Pepler and Craig (2005) found that for boys, this is normative as long as aggression occurs in the form of wrestling among adolescent boys.

Murray-Close and colleagues (2006) also investigated the extent to which children perceived physical and relational aggression as a moral problem (right or left leaning), a social convention problem (driven by social norms in order to maintain social order), or a personal problem (a matter of personal choice). Girls were more likely to view relational and physical aggression as moral problems. Boys, especially those who showed signs of aggressive behaviour, were more likely to use conventional or personal reasoning when discussing physical or relational aggression. It was also shown that girls who were perceived as relationally aggressive were more likely to develop a social convention orientation towards relational bullying.

Overall, the more aggressive children were less inclined to approach aggression as a moral issue. Although there is relatively little research made on the relationship between morality and aggression, it can be argued that the relationship is very complex and difficult to see, that gender differences are fundamentally present, as is the variable relationship between different forms of aggression.

1.5. Moral disengagement

Moral disengagement is defined as a cognitive process that individuals use to justify their own actions, even when they know they are wrong (Bandura, 2016). Bandura's theory is used to explain why people exhibit behaviours that violate their own moral norms. This theory explains that most people develop their own moral norms to act as a kind of self-regulatory mechanism, thereby controlling behaviour and reducing the occurrence of immoral behaviours. In this way, individuals can avoid violating their own moral beliefs. In 2021, Romera and colleagues showed a positive relationship between moral disengagement and bullying behaviour. However, the relationship between moral disengagement and victimisation also tends to be positive (Killer et al., 2019).

Moral disengagement was initially studied in terms of its relationship with aggression, and only later linked to other deviant behaviours. Moral disengagement is also reflected in Albert Bandura's social cognitive theory, which identifies it as a capacity of human behaviour to understand the world around them and themselves, and to control their behaviour. While examining the self-regulatory mechanisms of behaviour, Bandura paid particular attention to the functioning of morality, thus creating the theory of moral agency.

Within the framework of the moral agency (Bandura, 1990), he described the mechanisms of moral disengagement, explaining why individuals sometimes act in ways that go against their own moral beliefs, without any feeling of guilt or shame. In general, people rely on their own moral convictions to avoid undesirable behaviours that go against their own ethical perspective. At the same time, it is important to note that one should not expect unyielding adherence to one's moral standards. Bandura hypothesised that moral disengagement influences behavioural regulation by disabling the controlling function of moral norms, allowing individuals to avoid emotional reactions that are associated with certain moral content.

However, the interpretation of moral disengagement as a cognitive distortion (Gibbs et al., 1995) is correct in that it presents the aggressive behaviour and its negative consequences committed by the individual in a socially endorsed, or at least accepted way, without the need to abandon personal and social principles. Moral disengagement works through eight mechanisms that operate in four main areas: behaviour, agency, outcome and inclusion (Bandura et al., 1996). The eight mechanisms are namely moral justification, euphemistic labelling, advantageous comparison, minimising agency, responsibility allocation, ignoring or misconstruing consequences, dehumanisation and the attribution of blame (Bandura, 1990, 2016).

In moral justification, an immoral act is seen as one that serves some moral purpose (Bandura, 2002).

Bandura (2016) describes euphemistic language as highlighting the importance of language in deciding how others will view an event or action, historically it has been used in many cases, for example in wars when civilian casualties were recorded as 'collateral damage' or as a consequence of war.

Advantageous comparison occurs when unacceptable behaviour is explained by comparing it to even less acceptable behaviour, thereby reducing its severity (Bandura, 1990; Hsu et al., 2021). For example, when someone does not attend one class and claims that they still act more acceptable than those who do not attend classes at all (Hsu et al., 2021).

Displacement and diffusion of responsibility are two mechanisms very close to each other, both aiming to avoid taking responsibility for unethical behaviour by projecting it onto an authoritarian person or group in order to downplay their own role (Bandura, 1999, 2016). When examined alone, deflection has been shown to predict unethical decision making (Barsky, 2011), and attribution predicts support for aggressive behaviour by observers (Bjärehed et al., 2020).

Disregarding or distorting the consequence of action is a process through which individuals can avoid guilt by focusing on the positive consequences of their unethical behaviour as opposed to the negative, or by minimising the true extent of the harmful effect (Bandura, 1999, 2016). Consequence distortion is also associated with abusive behaviour (Thornberg & Jungert, 2014) and predicts support for abusive behaviour from bystanders (Bjärehed et al., 2020).

The last two mechanisms, dehumanisation and blaming, aim to change the perpetrator's perspective of the victim (Bandura, 1999, 2016). Dehumanisation is a process whereby the victim becomes less and less seen as human (Bandura et al., 1975). During dehumanization, empathic responses to others cease to exist (Bandura, 2002), and as a consequence, it is likely that dehumanization plays a relevant role in most forms of aggression, such as bullying, institutionalized discrimination, sexual assault, various aggressive attitudes, coercive sexual behavior, and cyberbullying (Bandura, 2002; Runions & Bak, 2015; Van Noorden et al, 2014; Zhou et al., 2021). Blaming others is a process whereby the perpetrator places him/herself in the role of the victim, denying the impact of his/her unethical behaviour (Bandura, 2002). However, part of the process is also to hold the victim or victims responsible for what happened to them (e.g., he/she brought it on him/herself) thereby tricking the perpetrator's sense of responsibility (Bandura, 1990; Bandura et al., 1996). This mechanism has been positively associated with bullying (Thornberg & Jungert, 2014), involvement in organised crime (Alleyne & Wood, 2010), and domestic violence (Bryant & Spencer, 2003).

Bandura (1999, 2002) describes four different categories of these psychological mechanisms: cognitive reconstructing of harmful behaviour, masking or reducing the role of the individual in causing the harm, distorting or ignoring the impact of the harm, and blaming or dehumanising the victim.

Cognitive restructuring provides insights and arguments by which negative affect can be presented in a positive light, including mechanisms such as moral justification, euphemistic labelling, and favourable comparison.

Minimising agency has cognitive strategies that remove responsibility for committing unethical behaviour by reducing or obscuring personal responsibility by shifting it to an authoritarian person or group.

Distorting or ignoring the consequences of harmful behaviour to help the individual move away from the harm caused or to highlight the positive aspects of the behaviour.

Dehumanisation and blaming, as mentioned in the mechanisms of moral disengagement, reduces the impact of negative behaviour by presenting the victim as deserving of his fate or by making him responsible for the harm he has suffered. According to Bandura, moral disengagement disinhibits individuals, making negative or even inhuman behaviour more common, by freeing the individual from inhibitions and guilt (Bandura, 1999; Bandura et al., 2001).

Ultimately, a number of studies have concluded that the stronger the moral disengagement, the more likely one is to violate individual and corporate norms and values (Bandura et al., 2000; Detert, Treviño & Sweitzer, 2008; Fida et al., 2014; Moore et al., 2012).

Further research has also shown a link between gender and moral disengagement. Men are more prone to moral disengagement than women (Almedia et al., 2010; Bandura et al., 1996, 2001; Barchia & Bussey, 2010; Obermann, 2011; Perren & Gutzwiller-Helfenfinger, 2012; Thornberg & Jungert, 2013).

The potentially difficult or dangerous nature of abusive situations makes active defending partly distinct from everyday prosocial behaviour. For this reason, it is particularly important to analyse the role of coping strategies in monitoring bullying rather than in problematic situations. In the child maltreatment literature, some research has analysed coping strategies used by maltreated children (Kristensen & Smith, 2003; Salmivalli et al. 1996; Smith et al. 2001). However, despite the importance of observers' responses to maltreatment (Gini et al. 2008), coping strategies used by outsider students who witness peer maltreatment have received surprisingly little attention. In other words, no prior research has examined the coping strategies of children who witnessed the negative life events of others (e.g., being abused by other peers), only their own personal events.

2. THE AIMS OF THE STUDY

The aim of this research is to investigate the phenomena described above and to explore the dynamics between them, thereby contributing to a deeper understanding of bullying as a social problem. This research seeks to answer the question of how morality influences active intervention in bullying, and whether the victimisation of bullying shapes individuals' views on bullying, and if so, does that contribute to moral disengagement or even promote active protection. However, it is important in this research, to investigate this amongst university students, as less academic research has been conducted on bullying in higher education.

3. HYPOTHESES

H1. There is a positive relationship between victimisation and moral disengagement.

Research on moral disengagement is quite contradictory, in terms of negative correlations (Pornari & Wood, 2010), positive correlations (Allison & Bussey, 2017), and non-significant correlations (Gini, 2006; Pozzoli et al., 2016). Two opposing theories have attempted to explain the relationship between victimisation and moral disengagement (Perren et al., 2012). First, experiencing victimisation may lead individuals to become more sensitive to moral responsibility and to have a more sophisticated perception of moral violations (Perren et al., 2012). Conversely, due to chronic victimisation, individuals may develop a tendency towards self-blame, which may lead to a perception that abuse is acceptable and therefore may exhibit a stronger moral disengagement argument (Perren et al., 2012).

H2. There is a negative correlation between moral disengagement and active defending.

The number of studies conducted on the relationship between intervention and moral disengagement is negligible compared to the number of studies conducted on the relationship between bullying and moral disengagement (Pozzoli et al., 2016). However, the studies conducted have concluded that there is a negative relationship between moral disengagement and defending (Caravita et al., 2012; Gini, 2006; Thornberg et al., 2017), but there have also been findings where this relationship was weak (Barchia & Bussey, 2011; Sijtsema et al., 2014) or not significant at all (Allison & Bussey, 2017; Gini et al., 2015). It has been shown that defenders show lower levels of

moral disengagement than perpetrators of abuse, as their actions do not go against their own moral convictions (Doramajian & Bukowski, 2015). However, further research is needed to see whether differences in the different subtypes of defensive behaviour and, in turn, in the level of moral disengagement may emerge (Belacchi & Farina, 2012).

H3. There is a positive correlation between victimisation and active protection.

Previous research has shown that there is a link between self-reported victimisation and higher willingness to intervene (Batanova et al., 2014) and that victims of bullying tend to protect each other (Huitsing et al., 2014). However, there is some insight into the affective and social cognitive processes of victim defending. It has been suggested that victims defend each other because they are friends (Pozzoli & Gini, 2013) or because they are targets of the same bully (Huitsing et al., 2014).

H4. There is a significant difference in active defending between men and women.

Several studies have examined gender as a variable in its relationship with bullying. Gender is a structure of social practice that creates power relations, attitudes and hierarchies, not only between people, but also between groups and institutions, which would simply override any analysis or individual perception of being female or male. This category allows for an understanding of the socially predetermined roles of men and women as perpetrators of unequal hierarchical relations (Steinfeldt et al., 2012). Gender has also been addressed in the literature, particularly in the case of school bullying. Research has shown that men are more likely to appear in both roles of bullying, as bully and bullied, while women are more prone to indirect bullying as peer gossiping. However, research has also shown a link between gender and moral disengagement. Males are more prone to moral disengagement than females (Almedia et al., 2010; Bandura et al., 1996, 2001; Barchia & Bussey, 2010; Obermann, 2011; Perren & Gutzwiller-Helfenfinger, 2012; Thornberg & Jungert, 2013).

4. METHODS

4.1. Participants

To test the first three hypotheses, a Pearson correlation test was used, which required 115 participants with 95% statistical power and a medium effect size (r = 0.3), based on the G*Power program.

To test the fourth hypothesis, an independent sample t-test was used, which required 210 participants (105 in the women's group and 105 in the men's group) at 95% statistical power and medium effect size (Cohen's d = 0.5), and 128 participants (64-64 in both groups) at 80% statistical power and medium effect size (Cohen's d = 0.5).

The questionnaire used in the recent study was completed by 160 Hungarian-speaking students of Babeș-Bolyai University, from 34 different majors and undergraduate and master's degree programmes. The sampling procedure applied was convenience sampling, including snowball sampling.

The sample was composed of participants aged 18-55 years (M=20.55 SD=4.20), of which 115 (71.9%) were female and 44 male (27.5%) and 1 other (0.6%) who identified themselves as male. The totality of the respondents consists of: 28.1% of students in psychology (44 individuals), 8.8% of students in education (14 individuals), 5% of students in special education (8 individuals), 3.1% of students in social work (5 individuals), 0.6% of students in human resource management (1 individual), 6.9% of students in management (11 individuals), 2.5% of students in banking and finance students (4 individuals), 4,4% of students in economics (7 persons), 3.8% of students in law (6 persons), 3.1% of students in history (5 persons), 2.5% of students in international relations (4 persons), 1.9% of students in philosophy (3 persons), 0.6% of students in anthropology (1 person), 1.3% of students in mathematics (2 persons), 0.6% of students in geography (1 person), 2.5% of students in tourism and spatial development (4 persons), 3.1% of students in cultural tourism (5 persons), 1.3% of students in geology (2 persons), 0.6% of students in agricultural engineering (1 person), 0.6% of students in chemical engineering (1 person), 1.3% of students in physical engineering (2 persons), 3.8% of students in engineering (6 persons), 1.3% of students in computer science (2 persons), 0.6% of students in Hungarian comparatistics (1 person), 0.6% of students in Hungarian-Japanese (1 person), 1.3% of students in Hungarian-Romanian (2 person) 0.6% of students in Hungarian-English (1 person), 0.6% of studenst in Hungarian-German (1 person), 1.9% of students in applied foreign languages (3 persons), 2.5% of students in communication and public relations (4 persons), 0.6% of students in tourism geography (1 person), 0.6% of students in sociology (1 person), 2.5% of students in biology (4 persons), 0.6% of students kinesiotherapy (1 person), 0.6% of students kinesiology (1 person). This represents a total of 34 different subjects in all. The questionnaire pack was sent to 101 first-year students (63.1%), 31 second-year students (19.4%), 18 third-year students (11.3%), 3 first-year Master's students (1.9%) and 7 second-year Master's students (4.4%).

4.2. Instruments

A total of 4 questionnaires were used in the study, which were completed once by each participant. The 4 questionnaires used were the Demographic Questionnaire, Olweus Bully/Victim Questionnaire, The Moral Disengagement Regarding School Bullying and Participant Role Questionnaire.

In the demographic questionnaire, we asked for information regarding gender, age, major, year and the average grade of the last semester.

The Olweus Bully/Victim Questionnaire (hereafter OBVQ) is the most commonly used tool as a measure of bullying, so we too opted to use it. The questionnaire is based on self-reports and includes a 23-item victim scale and a 23-item bully scale. In the study, we used 17 items from the victim scale, where respondents were asked to choose on a scale from 1 (Never) to 5 (Always) how often they experience the given statement. Overall, the OBVQ scale had a reliability value of .87 based on Cronbach's alpha, indicating good internal consistency.

The Moral Disengagement Regarding School Bullying scale consists of 18 items, where respondents were asked to reflect on how much they agree or disagree with a statement on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). The internal reliability of the full scale is .78 based on Cronbach's alpha, which indicates an acceptable internal consistency.

We used a subscale of the Participant Role Questionnaire (hereafter PRQ), the Self-Reported Abusive Behaviour subscale, of which 6 items were used. Again, on a scale from 1 (Not usual at all) to 5 (Very usual), respondents were asked to indicate how likely they would intervene or not. Internal reliability of the scale based on Cronbach's alpha .82 which indicates a good internal consistency.

4.3. Research design

The research used a correlational research design. This allowed us to examine the relationships between victimisation and moral disengagement, moral disengagement and active defending, and victimisation and active defending. Nevertheless, it is also an appropriate design because the research is considered to be basic research, and therefore aims to contribute to further in-depth studies to better understand and to handle the problem.

4.4. Procedure

Data provided their informed consent for the use of their data for statistical analysis. The questionnaire was administered via the Google Forms platform and required approximately 10 to 15 minutes to complete per participant. Participation in the study was voluntary, and no randomization was applied.

4.5. Statistical analyses

As a first step, the samples were characterised into descriptive statistical indicators (mean, standard deviation, minimum, maximum) and the normal distribution of the dependent variables was checked by means of the skewness and kurtosis. To test the first three hypotheses, Pearson correlation was used to examine the relationship between victimisation and moral disengagement, moral disengagement and active defending, and victimisation and active defending. To test the fourth hypothesis, the gender difference in moral disengagement, we used an Independent Samples T-test.

5. RESULTS

5.1. Descriptive data processing results

The total study had 160 participants and the normality of the full sample for the dependent variables was tested. No individuals were excluded from the study. The distributions of the different variables were examined separately, where each value is related to the normal distribution, i.e. a curve is skewed to the right or left relative to the other, or is peaked or flattened in the analysis. For the sex distribution, the normal distribution is fulfilled, as for both skewness and kurtosis indicators lie within the error range -1 to 1, making it suitable for parametric analysis.

Sociodemographic variables of the participants

Variables	*N*	M	*SD*	Min	*Max*	Skewness	*Kurtosis*
Gender	160	1.73	0.459	1	3	-0.854	-0.729
Age	160	20.55	4.201	18	55	6.35	44.13
Academic year	160	1.65	4,2	1	5	1.774	2.65
Victimisation	160	1.456	38	1	3	1.456	1.635
Moral disengagement	160	1.462	0.66	1	4	1.45	1.65
*Cognitive	160	1.3963	0.49	1	4	1.87	4.06
restructuring	160	2.76	0.48	1.33	4.33	-0.104	0.698
*Minimalising agency	160	1.55	0.67	1	4.50	1.658	3.429
*Distortion of cons.	160	2.15	0.54	1	4.17	0.760	1.25
*Dehumanisation	160	2.77	1.228	1	5	-0.138	-1.145
Active defending							

Note. **Subscales of moral disengagement*

H1. Victimisation and moral disengagement are positively correlated.

Table 1. *The correlation between victimisation and moral disengagement*

Variable	*N*	*M*	*SD*	1	2
1.Victimisation	160	1.67	0.463	—	
2. MD	160	1.91	0.408	0.158*	—

Notes. *p ≤ .05. MD=Moral Disengagement

There is a positive, weak relationship between victimisation and moral disengagement r(160) = 0.158, p = 0.046 . The higher the level of victimisation, the lower the level of moral disengagement.

H2. There is a negative correlation between moral disengagement and active defending.

Table 2. *The correlation between moral disengagement and active defending*

Variables	*N*	*M*	*SD*	1	2	3	4	5	6
1. ActiveDef	160	2.77	1.228	—					
2.CogRestruct	160	1.39	0.498	-0.100	—				
3. MinAgency	160	2.76	0.484	-0.102	-0.007	—			
4. ConsRefl	160	1.55	0.670	-0.076	0.621	0.006	—		
5. DeHu	160	2.15	0.543	0.029	0.513	0.024	0.626	—	
6. MD	160	1.46	0.664	-0.091	0.760	0.050	0.787	0.673	—

Notes. MD= Moral Disengagement, Activedef= Active Defending, CogRestruct= Cognitive Restructuring, MinAgency= Individual Power Minimization, ConsRefl= Consequence Distortion, DeHu= Dehumanization

There is no significant relationship between moral disengagement and active defending r (160)= -0.091, p= 0.354.

H3. There is a positive relationship between victimisation and active defending.

Table 3. *The correlation between victimisation and active defending*

Variable	*N*	*M*	*SD*	1	2
1.Victimisation	160	1.67	0.463	—	
2. Activedef	160	2.72	0.982	0.253*	—

Notes. *p ≤ .05. Activedef=Active defending

There is a positive, weak correlation between victimisation and active defending, r(158) = 0.253 , p = 0.001. The higher the level of victimisation, the lower the probability of the active defending.

H4. There is a significant difference in active defending between men and women.

Table 4. *Difference analysis between men and women in moral disengagement*

Variables	*Men*		*Women*		*t*(50.844)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
MD	*44*	*0.531*	*115*	*0.256*	*4.568*	*>0.001*	0.302

Notes. MD= Moral Disengagement

There is a significant difference in variances between the two groups. The condition for equality of variances is not met, F Levene = 31.165, p < 0.001. The Welch t test indicates a significant difference in moral disengagement between women (M = 1.79, SD = 0.25) and men (M = 2.18, SD = 0.53) t (157)= 4.586, p < 0.001. Gender as a quasi-independent variable has a significant effect on moral disengagement. Cohen's D effect size shows a value of 0.302, which indicates a weak effect of gender on moral disengagement is. Moral disengagement is more prevalent among men than it is among women.

6. DISCUSSIONS

The first hypothesis examined the relationship between victimisation and moral disengagement. Victimisation and moral disengagement are positively correlated and the strength was weak. As in other previous research, the correlation is positive (Allison & Bussey, 2017), although there have been studies that have found a negative correlation (Pornari & Wood, 2010). These results support the theoretical approach that, due to chronic victimisation and by developing a self-blame tendency, individuals come to the belief that bullying is acceptable and as a result, those who have experienced bullying become more prone to moral disengagement (Perren et al, 2012).

The second hypothesis investigated the correlation between moral disengagement and active defending, where no significant relationship was found. It is particularly interesting that no significant relationship was found for the subscales of moral disengagement, neither for cognitive reconstructing, nor for minimising individual agency, nor for distorting or disregarding consequences,

nor for dehumanisation. These results contradict previous research that has shown a negative relationship between moral disengagement and defensive behaviour (Caravita et al., 2012; Gini, 2006; Thornberg et al., 2017), but support previous research that has not shown a significant correlation (Allison & Bussey, 2017; Gini et al, 2015). One explanation for this may be that bullies typically do not lack social intelligence, so bullies may also assume the role of protectors in other cases. As Schonert and Reichl have described, bullying in many cases can be justified by individuals when it is done for the right reason. However, this does not preclude them from not intervening when they consider they should.

The third hypothesis indicated that there is a positive correlation between victimisation and active defending. In recent study, the results of this relationship showed a positive and weak correlation. Previous research has shown a relationship between self-reported victimisation and higher willingness to intervene (Batanova et al., 2014; Huitsing et al., 2014), the recent research is in line with these results, although the strength of the correlation is weak. This may be explained by one theory that the experience of victimisation could make individuals more sensitive to moral responsibility and thus to taking action against bullying (Perren & Gutzwiller-Helfenfinger, 2012).

In the last hypothesis, we examined the gender difference in moral disengagement. These results suggest significant differences between men and women in moral disengagement, with men showing a higher tendency to engage in the process. These results support previous research showing similar results (Almedia et al., 2010; Bandura et al., 1996, 2001; Barchia & Bussey, 2010; Obermann, 2011; Perren & Gutzwiller-Helfenfinger, 2012; Thornberg & Jungert, 2013). One explanation for this may be that, as previous research has pointed out, boys may try to justify aggressive behaviour and for boys, when looking at adolescence, aggression is considered to be more normative (Pepler & Craig, 2005).

7. LIMITATIONS AND FUTURE DIRECTIONS

Research in this area is considered to be groundbreaking, as there are no significant studies that specifically investigate the phenomenon of bullying.

The gender distribution of the sample could be considered as a limitation (women are overrepresented compared to men), as it is a topic where gender is an important variable. In future research, it would be worth keeping in mind that gender should be represented in approximately equal proportions in order to get a more accurate perspective on the attitudes of both sexes on this topic.

The sample size can also be considered a limitation, as it is not large enough.

The sampling method we used (snowball sampling) is important to mention as a limitation, as it means that this research is not randomised, and consequently the results cannot be generalised to the whole of the university population, with some majors being underrepresented compared to others. Furthermore, since this method relies on initial participants forwarding the questionnaire to their acquaintances, who are likely to have similar beliefs, this may distort the results obtained, thus reducing their representativeness and external validity, i.e. their applicability to the population as a whole.

Further similarly specific research in the field will provide a more comprehensive and accurate picture of the phenomenon and will help to develop new intervention programmes to reduce its occurrence and thus its negative effects on individuals, such as anxiety, depression and social isolation. It is important to highlight the role of morality in bullying in order to develop programmes similar to NAB IT! for example, and to apply them to higher education institutions where appropriate. Further research could also include aggression, or even other forms of intervention and their prevalence, or try to replicate these results on a larger sample, or even conduct a factor analysis study to identify more background factors. In the future, it would also be important, in order to ensure the representativeness of the results, to carry out some kind of experimental design study on the subject. It is also important to note that adolescent girls tended to report relational and physical aggression as a moral problem, while boys, especially those who showed signs of aggressive behaviour, tended to use more conventional or personal reasoning when it came to physical or relational aggression (Murray-Close, 2006).

Statements and declarations

Declaration of competing interest - None.

All authors contributed substantially to the study and approved the submitted version.

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Adolescent and Young Adult Substance Use. A Theoretical Review of Internal and External Factors

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ABSTRACT. This theoretical review investigates various cognitive factors, personality variables and external influences in the development of adolescent and emerging adults substance use. It summarizes results of existing literature on key personality traits (sensation seeking, impulsivity and sensitivity to reward, neuroticism), with an emphasis on their implication in shaping risk behaviors in the form of drug consumption. This review also explores how cognitive variables like familiarity with substances and risk perception interact in order to influence substance use decisions. Additionally, this article considers the pivotal role of external factors such as family and peer influence on these relationships. By integrating various theoretical and empirical studies, this review aims to provide a comprehensive understanding of the psychological, but also social aspects of substance use of individuals within this age group, offering insights for possible future research directions, treatment interventions and prevention strategies.

Keywords: adolescent, personality, cognitive factors, risk behavior, external factors

INTRODUCTION

Substance use represents a global multifaceted issue that is influenced by different and complex cognitive, personality and external factors. Theoretical models and results from empirical studies consistently provide support for the association between sensation seeking, impulsivity and neuroticism and adolescence, as well as emerging adult substance consumption. Sensation seeking

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is a personality trait that involves a predisposition toward seeking novel, intense experiences (Zuckerman, 1994). It is strongly associated with increased risk-taking, including involvement with drugs. Impulsivity, particularly as described in Dawe, Gullo, and Loxton's (2004) Two-Factor Model, highlights the significance of rash decision-making and reward sensitivity in the propensity for substance use. Neuroticism (i.e., tendency towards emotional instability; Kang et al., 2022) is also consistently associated with substance use.

Cognitive factors, including knowledge about substances, familiarity, and risk perception, further shape the decision to engage in substance use. Adolescents who are more familiar with substances or who have more misperceptions about the risks of substance use are more likely to consume. For example, Bhatia et al. (2023) discuss how increased exposure to substances can reduce perceived risks, thereby facilitating substance use.

External factors such as parents and peers influence the decision to consume substances. For example, disapproval and norms can either mitigate or facilitate substance behaviors depending on the context. For example, Yang et al. (2022) found that parental disapproval increases adolescents' risk perception of cannabis use, reducing the likelihood of engagement, while peer acceptance of substance use lowers perceived risks, particularly among sensation-seeking adolescents.

This review integrates findings from various theoretical perspectives to provide a comprehensive overview of how personality traits, cognitive processes, and external factors collectively influence adolescent substance use. By synthesizing these insights, the review aims to guide future research and inform more effective prevention and intervention strategies.

I. PERSONALITY FACTORS AND TEMPERAMENT

1. Sensation Seeking

Sensation seeking (SS; see also novelty seeking / thrill-seeking), as defined by Zuckerman (1994), involves a natural inclination toward seeking out diverse, new and intense sensations. Essentially, individuals with high levels of sensation seeking actively seek out thrilling and exhilarating experiences, needing stimulation. This personality trait also involves a tendency toward taking risks and a readiness to embrace them (Zuckerman, 1994; Cloninger et al., 1993). It is often seen as a facet of the broader concept of disinhibition, which implies challenges in controlling impulses and restraining behavioral tendencies (Zuckerman, 1994; Finn et al., 2000). Consequently, sensation seeking is consistently linked with substance use, particularly during adolescence, making this developmental stage

more susceptible to the onset of substance use disorders (SUDs) (Harden et al., 2008; Steinberg, 2008).

Mirnics et al. (2021) emphasized the importance of sensation seeking in predicting risky behaviors, particularly the potential direct impact on adolescent drug use patterns. In this sense, Shen et al., (2023) conducted a longitudinal three-year study, where participants' ages ranged from 15-18 (mean age at the first measurement was 16.90 years). Results indicated that, for individuals with higher baseline sensation seeking levels, SS trait reached the peak more closely and displayed a slower rate of increase after adolescence. Moreover, they indicated that both sensation seeking and the frequency of substance use increased simultaneously, with no discernable gender differences. Higher sensation seeking levels tended to precede consumption, but also increased even more following substance use. Consequently, the authors propose a bidirectional relationship between these two variables.

The findings from Brumback et al., (2021) indicate that sensation seeking is associated with increased cannabis use as early as age 15. For young adults, sensation seeking was linked to higher frequency of alcohol consumption after reaching 18 years of age, with positive expectations regarding the effects of alcohol also exerting a significant influence. Authors suggest that sensation seeking may have a more pronounced influence on cannabis use during the earlier developmental stages, as early as age 15, while its impact on alcohol consumption becomes more prominent after reaching age 17. Higher sensation seeking and its accelerated growth were directly linked to cannabis/marijuana use, whereas only elevated sensation seeking was associated with alcohol consumption. A family history of substance use was directly associated with heightened impulsivity, which, in turn, correlated with levels of sensation seeking. Wasserman et al., (2020) findings suggest that substance use among family members indirectly influences an individual's own substance use through increased impulsivity (see next section devoted to this construct).

2. Impulsivity and Sensitivity to Reward

2.1. Theoretical considerations

Impulsivity is a multifaceted construct that encompasses a predisposition toward rapid, unplanned reactions without due consideration of potential negative outcomes (The International Society for Research on Impulsivity, 2016). It involves both trait and state aspects, influencing behavior across various situations (Stamates & Lau-Barraco, 2020). Impulsivity as a trait suggests relative stability throughout life, while state models focus on impulse action and choice (Stamates &

Lau-Barraco, 2020). Impulsivity is theoretically associated with behavioral disinhibition (i.e., common genetic liability associated with substance use and externalizing psychopathology, also affecting control and sensitivity to reward; Iacono, Malone, & McGue, 2008) and is linked with impairments in behavioral regulation (see next section on Regulation and Self-Control; Brown, Fite & Bortolato, 2022, Defoe et al., 2022). It serves as a predictor for externalizing disorders and is significantly related to adolescent antisocial behavior and substance use (Defoe et al., 2022).

Different models address this construct from the perspective of different dimensions. In this review, we will be discussing The Two-Factor Model (Dawe, Gullo, & Loxton, 2004; Gullo & Dawe, 2008), and the model derived from the factor analyses conducted by Whiteside and Lynam (2001), including Urgency, Premeditation, Perseverance and Sensation Seeking (UPPS-P Impulsive Behavior Scale).

2.1.1. The Two-Factor Model

The Two-Factor Model proposed by Dawe and colleagues (Dawe, Gullo, & Loxton, 2004; Gullo & Dawe, 2008) is grounded in behavioral and neurobiological research and it points towards the existence of two different traits – rash impulsivity and a distinct reward drive (Stamates & Lau-Barraco, 2020).

In the context of impulsivity and substance use, reward drive refers to the tendency to seek out and be motivated by rewarding stimuli or experiences (Gullo, Loxton, and Dawe, 2014). Originally, the concept of reward drive is derived from the work of Gray (1987), where he proposes the existence of two system - Behavioral Activation System (BAS), linked to sensitivity to reward, and Behavioral Inhibition System (BIS), linked to sensitivity to punishment. According to Gray (1987), BAS regulates approach motivation and directs behavior towards potential and actual reward stimuli. Individuals high in this trait are more likely to engage in seeking positive outcome behaviors. In the work of Dawe, Loxton, and Gullo (2004), Sensitivity to Reward is discussed in the context of impulsivity and their implication in risk-taking behaviors, such as substance dependence. They propose that individuals higher in reward sensitivity are more driven by the potential for immediate gratification. Regarding Sensitivity to Punishment, Gray (1987) proposes that the Behavioral Inhibition System is responsible for detecting signals of punishment, non-reward, or novel stimuli, and it is often associated with avoidance of potential and actual punishment cues, leading to cautious and risk-averse behaviors. In the work of Dawe, Loxton, and Gullo (2004), sensitivity to punishment is discussed in the context of impulsivity and substance use. They propose that individuals high in punishment sensitivity tend to avoid potentially negative outcomes behaviors.

Regarding rash impulsivity, Gullo, Loxton, & Dawe (2004) propose that it is a form of impulsivity characterized by making quick decisions without considering the consequences, often in response to emotional or rewarding stimuli, hence its connection to reward drive and addictive behaviors, including substance use eating disorders. Rash impulsivity often reflects poor control, meaning high trait individuals are more likely to act on immediate urges, even when those actions might lead to negative outcomes. This happens because of valuation of short-term rewards over long-term outcomes.

In summary, heightened levels of reward drive (or reward sensitivity) and rash impulsivity can significantly impair an individual's ability to resist rewarding stimuli, even when they are aware of the costs of their behavior. These traits contribute to a greater vulnerability towards taking risks, as the immediate appeal of reward may override long-term outcomes.

2.1.2. The UPPS factors

To elucidate the nature of impulsivity, Whiteside & Lyman (2001) performed a series of factor analyses in order to distinguish between several aspects of impulsivity (see also Verges et al., 2019). Overall, impulsivity is presented as a multidimensional construct defined by rapid decision-making, resulting in inadequate behaviors that carry an increased probability of unfavorable consequences. However, Whiteside and Lyman's research helped identify four main dimensions of impulsivity, namely Urgency (i.e., tendency to act impulsively in the context of emotional distress), Premeditation (i.e., consideration before implementing behaviors; lack of premeditation indicates a proneness towards taking rash decisions), Perseverance (i.e., the ability to remain focused in a task, especially when confronted with boredom or frustration), and Sensation Seeking. Regarding Urgency, it was later divided into two subtypes: positive urgency (PU; i.e., acting on impulse in a positive affect situation) and negative urgency (NU; i.e., acting on impulse in a negative affect situation), which differ based on the emotional valence triggering impulsive behavior (Cyders et al., 2007). Regarding the latter dimension, there is a great conceptual overlap between what Whiteside and Lyman define as sensation seeking and what Zuckerman originally proposed. Shortly, Whiteside and Lyman propose that sensation seeking is a subordinate dimension of impulsivity, referring to pursuing novel and intense experiences. In contrast, Zuckerman proposed it as a superordinate dimension of personality that involves distinct dimensions – thrill and adventure seeking, experience seeking, disinhibition and boredom susceptibility.

2.2. Empirical Data

The findings from Verges et al. (2019) indicated that the Two-Factor Model of impulsivity outperformed the UPPS-P measures in predictive accuracy. Despite the connection with various substance use outcomes, only rash impulsivity and reward drive remained unique predictors of substance use initiation in the multivariate model. In contrast, Riley et al., (2021) found a significant main effect on current marijuana use observed for a facet of the UPPS-P, namely lack of premeditation. This association was observed specifically for this substance, with higher scores on lack of planning linked to increased reports of current marijuana use.

The main effects of the Felton et al. (2019) study revealed that adolescents with increased impulsivity levels at baseline and lower initial depressive symptoms demonstrated more intense substance use increases. Moreover, their findings suggest that adolescents with depressive symptoms and lower impulsivity levels exhibited slower increases in substance use over time. This points to a stronger positive association between depressive symptoms and substance use among adolescents with higher levels of impulsivity. Regarding negative affect and depression, elevated impulsivity may act as a vulnerability factor, leading youth to adopt more impulsive coping strategies in response to increased distress and in the absence of more optimal regulatory mechanisms.

According to Defoe et al.'s results (2022), transitions in impulsivity from early to mid-adolescence but not from mid-adolescence to late adolescence were predictive of shifts in antisocial behavior and alcohol consumption. Early adolescent impulsivity predicted late-adolescent Alcohol Use Disorder through mid-adolescent antisocial behavior.

In addition, the outcomes of Brown, Fite & Bortolato (2022) indicate that impulsivity is a mediating factor in the relation between emotional maltreatment and past-month marijuana, alcohol, and tobacco use. This type of abuse, as the form most significantly associated with impulsivity, is consistently observed in other studies as well. Emotional abuse may give rise to a disinhibited response style, potentially aggravating impulsive use behaviors. This is consistent with functional neuroimaging studies (e.g., Hogsted et al., 2024, Yang et al., 2023, Brown, Fite & Bortolato, 2022), pointing to the impact of child maltreatment on the prefrontal cortex, a central region for inhibitory control, involved in substance use behaviors. The mediation role of impulsivity extends previous conclusions that highlighted urgency as an important facet of impulsivity in the connection between emotional abuse and alcohol consumption outcomes.

3. Temperament

Child temperament refers to inherent and relatively stable predispositions that modulate children's activity and reactivity, emotionality, and sociability (Goldsmith et al., 1987, Waddell et al., 2024). There are multiple models explaining temperament, but we focus on definitions by Goldsmith at al. (1987) and Rothbart et al. (1994).

As per its dimensions, activity refers to the level of movement and general energy exhibited by an individual; children characterized by high activity often seek out play and exploration (Goldsmith et al., 1987). Reactivity refers to the speed and intensity of one's response to stimuli from the environment; children high in reactivity respond quickly and intensely. Emotionality refers to the frequency, but also intensity of emotional responses; children high in emotionality often experience profound joy, anger, sadness etc. Sociability refers to a tendency to seek out and feel good in social contexts; children high in sociability are often outgoing and active in social settings (Goldsmith et al., 1987).

According to Rothbart's model (1981) **t**here are two main dimensions of child temperament: emotional reactivity and self-regulation or effortful control. The former involves child reactions to changes in their environment, and the latter pertains to a child's ability to manage these reactions (Rothbart et al., 1994, Waddell et al., 2024). Children with higher emotional reactivity often struggle with self-regulation, pointing to the intertwining nature of these two constructs (Waddell et al., 2024).

Within this framework, one temperament dimension strongly associated with substance use, particularly marijuana consumption, is negative emotional reactivity (i.e., intensity and persistence of emotional responses to negative stimuli or stressors). This trait may increase adolescents' vulnerability to marijuana consumption, as they may use it as a mechanism to regulate negative emotions (Tache et al., 2020). The relationship between temperament traits like negative emotional reactivity and marijuana use may be influenced by environmental factors. For adolescents with higher negative emotional reactivity in low-problem neighborhoods, there was an increased marijuana use pattern, but this relationship remained unaffected by exposure to high-problem neighborhoods (Tache et al., 2020).

Another dimension associated with substance use is positive emotional reactivity. Strickhouser, Terracciano & Sutin (2020) suggested that children exhibiting greater sociability (i.e., a sub dimension of surgency/positive emotional reactivity) at ages 4-5 were more likely to start using substances during adolescence. Those displaying higher reactivity were more prone to initiate cigarette or cannabis use, though not alcohol or other drugs.

In terms of effortful control/self-regulation, children with higher levels of persistence (i.e., one of its subdimensions) exhibited a reduced risk of smoking initiation, but not alcohol, marijuana, or other drugs use. These temperament effects persisted over a span of ten years and remained significant even after adjusting for major risk factors, such as gender, parental substance use, family and neighborhood socioeconomic status (Strickhouser, Terracciano & Sutin, 2020).

4. Neuroticism

Neuroticism (N) is among the most widely known personality traits, typically associated with negative affectivity (Grevenstein, Bleumke & Kroeniger-Jungaberle, 2016). It is often conceptualized as a predisposition towards emotional instability (Kang et al., 2022), encompassing feelings of heightened anxiety, depression, emotional volatility, usually accompanied by an ineffective coping mechanism in the face of various stressors. Research suggests that individuals high in neuroticism engage in dysfunctional substance use patterns to manage or alleviate feelings of instability inherent to their baseline negative emotional state (Davies, Harty & Boden, 2024).

For example, elevated levels of neuroticism, coupled with low agreeableness (i.e., personality trait characterized by politeness and cooperativeness) and low conscientiousness (i.e., personality trait associated with task orientation and orderliness), were associated with an increased likelihood of having recently used illegal drugs (Kang, 2022). It was suggested that neurotic individuals may start using drugs as a form of self-medication to alleviate discomfort (Khantzian, 1987, Kang, 2022). Additionally, increased neurotic tendencies were strongly involved in the relationship between childhood adversities and symptoms of substance use disorder (Davies, Harty & Boden, 2024). Higher levels of neuroticism, but also openness, independently predicted myopic relief, which refers to a temporary escape from existing stressors (Lac & Donaldson, 2019).

Neuroticism is also strongly related to negative affectivity, a sub dimension of temperament (also see the section on Temperament). Kendler et al. (1993) examined the genetic and environmental influences on the development of major depression and its association with personality traits, particularly neuroticism, in a female twin population. This study proposes a continuity between early negative affectivity and later neuroticism, highlighting the interplay between genetic and environmental factors in the development of depressive disorders.

II. REGULATION AND SELF-CONTROL

The dual system model of self-regulation proposes that the human mind operates in two systems – a reflexive lower-order (i.e., reactive system that includes reward and punishment sensitivity; see previous section on Impulsivity and Sensitivity to Reward) and a reflective higher-order system (Khan et al., 2018). The latter is based on strategical and deliberate operations and is associated with cognitive control. It involves intentional top-down processes – self-regulation and self-control (Khan et al., (2018).

Self-regulation is usually defined as a set of interconnected thoughts, feelings, and actions employed to adjust to shifting circumstances of life (Shin, Ksinan Jiskrova & Wills, 2019). Self-control refers to the deliberate action of inhibiting impulses and prioritizing long-term objectives over immediate gratification (Duckworth & Steinberg, 2015, Sutherland, Sutherland & Trucco, 2022). Self-regulation involves processes such as monitoring and adjusting emotional experiences (emotional regulation), behaviors (behavioral regulation), and cognitions (cognitive regulation) to take control over actions (Cooper et al., 2023). The regulation processes integrate various resources, such as neuro-physiological and social cues, to guide goal-oriented actions (Cooper et al., 2023). Temperamentally, self-regulation involves effortful control (Rothbart, Derryberry, & Posner, 1994, Khan et al., 2018; see also previous section on temperament), which is based on executive functions. It encompasses three subcomponents: inhibitory, attentional, and activation control. Inhibitory control suppresses behavior, attentional control is responsible for attention shifting and focusing, and activation control facilitates performing an action despite wanting to avoid it (Rothbart et al., 2000, Khan et al., (2018). Effortful control is considered mainly responsible for inhibiting prepotent responses in favor of potentially better long-term results, detecting errors, and planning behavior. In this dynamic framework of the dual systems model and temperament, effortful control governs the operation of the reflexive system to support goal-directed behavior (Khan et al., (2018).

As it was mentioned previously, self-control primarily refers to the ability to regulate one's emotions, thoughts, and behaviors in the face of impulses. It is crucial for achieving long-term goals and maintaining behavioral consistency. This has been studied from various angles, including its cognitive, behavioral, and emotional aspects. Some key conceptualizations of self-control involve; Baumeister and colleagues's view (1998), who proposed that cognitive control represents a limited resource that can be depleted with use; Mischel and Ayduk's perspective (2004); where they focused on the cognitive aspects of self-control and its role in delaying gratification; and Duckworth and Seligman's

work (2005), where self-control was highlighted in relation with persistence and goal achievement in academic settings.

Irrespective of the conceptualization, self-control has an important role in restraining behaviors, and recent research underscores the critical role of this cognitive factor in substance use. For example, Kim et al. (2022) conducted a longitudinal study noting that increased self-control contributes to reduced substance use in adolescents in a direct way. This result suggest that those adolescents with higher self-control are less likely to get involved in substance use behavior over time. Additionally, Smith, Davis & Thompson (2020) investigated the direct influence of self-control on drug use in both adolescents and young adult populations. Their study corroborates the findings of Kim et al (2022), indicating that high control is a predictor of low substance abuse.

Furthermore, longitudinal research by Lee et al. (2020) revealed that low self-control, peer drug use, and parent-child attachment are strong predictors of heavier alcohol, tobacco, and cannabis use. In a study by Sutherland, Sutherland & Trucco (2022), low levels of self-control and high internalizing symptoms demonstrated the strongest association with the intent to use e-cigarettes and a higher likelihood of actually using e-cigarettes later on. Adolescents with higher self-control along with anxiety and depression demonstrated decreased intentions of current use, and are thought to be less likely to engage in future use of e-cigarettes, suggesting a protective effect of this factor variable.

In a study by Martz et al. (2021) investigating substance use using the Go/No-Go paradigm, individuals characterized by moderate inhibitory brain-related activation combined with low reward brain-related activation displayed lower substance use levels. In contrast, individuals characterized by high inhibitory activation and high reward activation interestingly emerged as the highest risk group. During the Go/No-Go task, these individuals displayed the highest inhibitory activation, but also the highest reward activation. Notably, the authors propose that stronger inhibition doesn't necessarily cause better impulse control (a resilience factor in substance use), but this result could suggest a compensation for the deficits in overall cognitive control (Martz et al., 2021).

Anton-Torro et al. (2021) and colleagues identified higher levels of dysexecutive traits, as measured by the Dysexecutive Questionnaire (DEX; Simblett & Bateman, 2011) and impulsivity traits, as measured by the Barratt Impulsivity Scale (BIS-11; Patton, Stanford, & Barratt, 1995) in alcohol-naïve adolescents who transitioned to more problematic alcohol use patterns (binge drinking), using magnetoencephalography (MEG) functional networks. A distinct pattern of hyperconnectivity in main regions of inhibitory control networks was found. These correlated positively with behavioral traits and later predicted future alcohol consumption rates. In this study, hyperconnectivity in inhibitory

control networks is associated with increased risk-taking and impulsive behaviors, suggesting that it is maladaptive in this context. In the case of inhibitory control networks, hyperconnectivity might reflect an inefficient or disrupted regulation of impulses. Normally, these networks help in suppressing inappropriate behaviors and controlling impulses. Increased connectivity in these networks could indicate that the brain is compensating for, or struggling with, regulating these functions effectively. Rather than facilitating better control, it may reflect underlying difficulties in managing impulses, potentially contributing to problematic behaviors such as binge drinking.

According to Cooper et al., (2023), emotional and behavioral dysregulation acted as a mediator between child maltreatment and subsequent substance use. In contrast, results by Shin et al., (2019) indicate that behavioral dysregulation serves as a mediator in the association of childhood emotional maltreatment and problematic patterns of alcohol use, emerging in young adulthood (binge drinking, alcohol-related problems, Alcohol Use Disorder). These findings suggest that a history of childhood emotional abuse might make an individual more susceptible to alcohol use and related disorders, due to tendencies towards impulsivity and distractibility.

In the relation between BIS/BAS (see previous section on Impulsivity and Sensitivity to Reward), substance use, and effortful control, the only factor of effortful control that acted as an important moderator was inhibitory control (Kahn et al., 2018). The findings indicate moderate but significant interactions, pointing to the role of low inhibitory control and punishment sensitivity (see previous section on Impulsivity and Sensitivity to Reward) on alcohol and cannabis use. Another predictive factor that is worth mentioning here is activation control, which emerged as a significant negative correlate of alcohol and cannabis use. Effortful control, alongside implicit attitudes and expectancies of use, interacted in predicting adolescents' cannabis use. Among adolescents with low levels of self-regulation and reduced negative expectancies, positive implicit attitudes toward marijuana were indeed associated with increased cannabis use one year later (Egerton, Colder & Lee, 2021).

Together, these studies underscore the critical role of regulation and control in influencing substance use behaviors, both in a direct and indirect way. Fostering self-control as a preventive measure against substance abuse could be a key factor, having a critical role in managing and reducing risky behaviors. In conclusion, improving self-control and emotional regulation can significantly reduce the risk of substance abuse, emphasizing the need for targeted interventions to enhance these skills.

III. COGNITIVE FACTORS

1. Knowledge and familiarity

Knowledge about different substances or substance use, as well as familiarity with them, have been considered as important risk factors for the actual substance consumption, particularly in adolescence.

Knowledge is included in the concept of familiarity and it can be derived from information about a stimulus (Wang et al., 2018), direct exposure or experience with it (Klein, 2008; Liao et al., 2011), or unconscious priming to it (Kahneman, 2003; Corrigan and Nieweglowski, 2019, Bhatia et al., 2023). In relation to substance use, familiarity could act as a risk factor, because of its potential of diminishing the perception of risk. For example, increased exposure to advertising correlates with perception of the presented information as trustworthy and reliable, thus not as risky (Bhatia et al., 2023).

In the study of Bhatia et al. (2023), results revealed that age might be the most influential factor in the association of familiarity with substances. Notably, familiarity with substances during the ages of 9 to 10 serves as a predictor for substance use during early adolescence. On average, individuals are familiar with around 5 substances at age 11 and approximately 7 substances by age 13. After adjusting for other predictors, the probability of reporting use increased by 1.27 times for each additional substance with which an individual was familiar.

2. Misperceptions and risk

Amialchuck, Ajilore & Egan (2019) investigated misperceptions about peer substance norms. For the three substances considered – alcohol, tobacco, and cannabis – heightened levels of misperceptions about the group-using norm significantly increased an adolescent's own use. This effect is substantial but slightly smaller when compared to the effect of actual peer behavior. The impact of misperceptions seemed to be most pronounced in the case of cannabis.

Regarding risk perception and substance use, several key points are highlighted by Mennis, McKeon & Stahler (2023). After recreational cannabis legalization, cannabis use escalated among both adolescents and young adults. The association between risk perception, cannabis use, and its prevalence increased post-legalization. One mechanism that could explain this is increased accessibility and societal acceptance, particularly important for individuals with lower risk perceptions. There was also a potential decrease in the proportion of marijuana users seeking professional treatment following recreational legalization, a concerning trend given the already low treatment rates even prior to legalization.

3. Motives

Cox and Klinger (1988) proposed the substance use motivational model, initially devised to elucidate alcohol consumption (Poelen, Schijven & Otten, 2022). This influential model has found applicability in understanding motivations for using other substances, such as cannabis. This model posits that involvement in substance use behavior is motivated by a complex interplay of individual characteristics with situational contexts and expectations regarding benefits and costs of use (Conway et al., 2020). These motives are directed by an individual's tendency to pursue or avoid outcomes. According to Cooper (1994), motives can be differentiated based on two factors – the source, which can be internal or external, and valence, consisting of positive or negative reinforcement.

Further work on the two broad goal categories (approach and avoidance) included in Cox and Klinger's model led to the emergence of four substance motives: coping (to reduce internal negative consequences), conformity (to escape from negative external or social outcomes), social (to acquire social or positive external rewards), and enhancement (for positive internal rewards) (Cloutier et al., 2019).

Conway et al. (2020) found that positive effects and social motives were concurrently associated with more frequent simultaneous alcohol and marijuana use (SAM) and prospectively predicted SAM use, surpassing baseline levels of use over a 3-month follow-up period. Moreover, positive effects were associated with outcomes at baseline, possibly indirectly influenced by high levels of use. Social motives showed changes in SAM outcomes from baseline to follow-up, whilst enhancement motives had a pronounced effect in predicting SAM use and consequences. Calm or coping motives were correlated with initial SAM levels, but did not predict outcomes at either assessment point.

King, Mrug & Windle, (2020) found a correlation between higher levels of depressive symptoms and a propensity to use marijuana as a coping mechanism, leading to more frequent marijuana use within the past year. Association with peers who use substances was linked to a higher inclination towards using marijuana for enhancement and social reasons. Expansion motives were associated with increased marijuana use over the past 12 months, while conformity motives were linked to less frequent consumption.

Results by Glodosky & Cuttler (2019) study consolidate the moderating role of coping motives in the relationship between stress and depression. Coping motives, but not other motives for cannabis use, moderated the link between stress and depression. This implies that individuals with high levels of stress who use substances as a coping mechanism may experience elevated levels of depression. Additionally, expansion and conformity motives significantly moderated the relationship between stress and anxiety.

IV. EXTERNAL FACTORS

1. Parents

Undisclosed use by adolescents at home has a significant impact on substance outcomes. Individuals who exclusively engaged in such behavior demonstrated elevated alcohol and substance consumption and more adverse outcomes compared to their counterparts who abstained or consumed with parental awareness (Fay et al., 2020). Conversely, those who never engaged in substance use without their parents' knowledge demonstrated fewer substance-related outcomes, even after adjusting for other factors (Fay et al., 2020). Both parents' disapproval significantly increased youth risk perception of cannabis, consequently reducing use (Yang et al., 2022). Perceiving risk played a mediating role in the relationship between parental disapproval and youth cannabis consumption. Parental disapproval had a significant direct effect on youth cannabis use. Moreover, the greater the adolescents' perception of beer consumption as acceptable because of their parents' habits, the more likely they were to drink beer themselves (Bergagna & Tartaglia, 2019).

2. Peers

Peers also significantly influence adolescent substance use. Peer disapproval demonstrated a stronger indirect effect on youth marijuana use through youth risk perception (Yang et al., 2022). Many adolescents anticipated positive outcomes from alcohol consumption and perceived binging as acceptable due to frequent engagement by their peers, underscoring the perception of social norms as a key factor in adolescent alcohol use (Bergagna & Tartaglia, 2019).

V. INTERACTIONS BETWEEN INTERNAL AND EXTERNAL FACTORS

Waddell et al., (2024) found that parental substance use indirectly influences adolescent drinking through childhood temperament and later negative urgency. Parental substance use disorder correlated with dysregulated irritability temperament during childhood (i.e., an aspect of emotional reactivity, encompassing reactivity to anger, which overlaps with low effortful control; Waddell et al., 2024), which was linked to adolescent negative urgency (see previous section on Impulsivity and Sensitivity to Reward), subsequently associated with adolescent drinking behaviors. Consequently, parental substance use disorder exhibited a sequential indirect connection with adolescent drinking, operating

through both childhood dysregulated irritability and subsequent adolescent negative urgency. This association was moderated by above-average maternal support (i.e., emotional and physical support and availability to the child; Furman & Burmeister, 1985, Waddell et al., 2024).

Using Cloninger's framework on temperament (Cloninger, 1987), Kapetanovic et al. (2019) found that adolescent disclosure appears to be a protective factor for adolescents with difficult temperaments. Both unstable and detached-fearless temperaments share a propensity towards risk, albeit in distinct manners. Adolescents in the detached and fearless cluster demonstrate low levels of harm avoidance (i.e., tendency toward caution and avoidance of potentially unpleasant contexts) and reward dependence (i.e., the extent to which individuals seek out positive reinforcement), embracing novelty-seeking (i.e., tendency to seek out new and exciting stimuli) despite associated risks. Conversely, those with an unstable temperament show high novelty-seeking tendencies and even higher levels of harm avoidance. This results in a pronounced inner conflict between searching for excitement and expecting punishment, with limited opportunities for regulating this tension through social interaction (Kapetanovic et al., 2019).

The impact of parental knowledge on adolescent substance consumption appears to be moderated by adolescent temperament. Specifically, parental solicitation (i.e., parents actively seeking information from their children) is linked to elevated engagement with substances among adolescents within the detached-fearless temperament cluster, but not among those in other clusters. This cluster comprises individuals with moderate and elevated novelty-seeking tendencies, low levels of harm avoidance, and low reward dependence. When parents actively solicit information from their adolescents, this behavior may lead to increased adolescent use over time. Authors have proposed that parental solicitation may be perceived as intrusive, thereby amplifying adolescents' sense of being excessively controlled (Kapetanovic et al., (2019) et al., 2017).

Parental knowledge was associated with decreased levels of substance use among adolescents exhibiting the detached and fearless temperament. When adolescents with this temperament communicated with their parents, their substance involvement decreased. However, when engaging in substance consumption, especially adolescents with a detached-fearless temperament tended to withdraw.

Kapetanovic et al. (2019) propose that parental solicitation may carry drawbacks, while fostering open communication between parents and adolescents is more likely to promote optimal psychosocial adolescent development. This is particularly advantageous for adolescents exhibiting high levels of thrill-seeking and fearlessness (Padilla-Walker & Nelson, 2010), coupled with low sociability (Grusec, 2011, Kapetanovic et al., 2019).

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Empathy and Peer Defending: Half-longitudinal Mediation Role of Social and Emotional Competencies

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ABSTRACT. Empathy has been studied systematically in relation to school bullying. It is also an important component of bullying prevention and intervention programs aimed at promoting bystander intervention. These interventions encourage peers to intervene and defend the victim or stop the aggressor by increasing empathy levels. Previous research has highlighted that social and emotional competencies (SEC) are essential in both cognitive and affective empathy and prosocial behaviors such as defending. However, few studies have addressed the mechanisms by which empathy facilitates defense. In this study, we tested whether SEC mediate the relationship between first cognitive, then affective empathy and defending in a cross-lagged panel model for a half-longitudinal design. Participants included 414 adolescents with answers at both time points, and 281 with answers only at T1. The mean age of participants at T1 was 12.72 (SD = 1.14), while for T2 it was 12.30 (SD = 0.89). Results confirm the indirect effect of empathy on defending through SEC only for cognitive empathy and not for affective empathy.

Keywords: empathy, defending, social and emotional competencies

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ABSTRAKT. Empathie wurde systematisch im Zusammenhang mit Schulmobbing untersucht und ist ein wichtiger Bestandteil von Präventions- und Interventionsprogrammen, die darauf abzielen, die Bereitschaft von Zuschauer*innen zur Intervention zu fördern. Diese Maßnahmen ermutigen Gleichaltrige einzugreifen, indem sie das Opfer verteidigen oder den Täter stoppen, indem sie das Empathieniveau erhöhen. Frühere Forschung hat hervorgehoben, dass soziale und emotionale Kompetenzen (SEK) sowohl für kognitive als auch für affektive Empathie sowie für prosoziale Verhaltensweisen wie das Verteidigen essenziell sind. Dennoch gibt es nur wenige Studien, die die Mechanismen untersuchen, durch die Empathie das Verteidigen erleichtert. In dieser Studie überprüften wir, ob SEK die Beziehung zwischen zunächst kognitiver, dann affektiver Empathie und dem Verteidigungsverhalten in einem Cross-Lagged-Panel-Modell innerhalb eines halb-longitudinalen Designs vermittelt. An der Studie nahmen 414 Paare von Jugendlichen teil, die zu beiden Messzeitpunkten Antworten gaben, sowie 281 Teilnehmende nur mit Antworten zu T1. Das Durchschnittsalter der Teilnehmenden betrug bei T1 12,72 Jahre (SD = 1,14) und bei T2 12,30 Jahre (SD = 0,89). Die Ergebnisse bestätigen den indirekten Effekt von Empathie auf das Verteidigungsverhalten über SEK nur für die kognitive, nicht jedoch für die affektive Empathie.

Schlüsselwörter: Empathie, Verteidigung, soziale und emotionale Kompetenzen

1. EMPATHY AND PEER DEFENDING: HALF-LONGITUDINAL MEDIATION ROLE OF SOCIAL AND EMOTIONAL COMPETENCIES

School bullying is defined as a form of intentional and repeated aggression over time with a power imbalance between the involved parties (Olweus, 2013). It remains a common problem in today's educational system, contributing to a host of mental health issues for both victims and bullies (Hymel & Swearer, 2015). Although it has been viewed as a dyadic interaction, observational research has revealed that peers are also usually involved (Craig et al., 2000). Salmivalli et al. (1998) identified six different roles concerning bullying: victim, bully, reinforcer of the bully, assistant of the bully, defender of the victim, and outsider. Evidence suggests that the involvement of different participants in bullying could influence the outcome of the interaction between the victim and the bully, favoring the former or the latter (Salmivalli, 1999). Specifically, assisting or supporting the bully promotes aggression, while helping the victim can hinder it.

Being defended by a peer was positively related to the adjustment and social status of the victim (Sainio et al., 2011) and to diminished daily mood problems (Laninga-Wijnen et al., 2024). Being defended could also moderate the risk factors for victimization, such as social anxiety and peer rejection (Kärnä et al., 2010). These risk factors were greater in classrooms with high bully reinforcing and low peer defending. Additionally, bystander interventions, including strategies for raising victim defending among peers, are effective in reducing bullying behaviors (Hikmat et al., 2024; Polanin et al., 2012). Therefore, it would be advantageous to identify the factors that facilitate defending behavior. This way, we can contribute to better and more efficient bullying prevention and intervention programs.

Empathy is one such factor that has been consistently investigated in relation to different aspects of bullying, such as significant associations between low empathy and bullying (Jolliffe & Farrington, 2006). One conceptualization of empathy identified four recurrent themes in empathy definitions: understanding, feeling, and sharing another person's emotional states, with a differentiation between the self and the other (Eklund & Meranius, 2021). There are two types of empathy, cognitive and affective (Watt, 2007), each with its own biological network (Winters et al., 2021). Cognitive empathy refers to the ability to understand the perspectives and feelings of others (Dorris et al., 2022), whereas affective empathy reflects sharing of the emotional response of the interacting partner (Cuff et al., 2016). A systematic review indicated that bullying was negatively associated with both affective and cognitive empathy, victimization was negatively associated only with cognitive empathy, and defending was consistently positively associated with both types of empathy (van Noorden et al., 2015). Meta-analytic data also confirmed these results in multiple instances (Imuta et al., 2022; Ma et al., 2019). Given its importance in bullying studies, raising empathy towards victims or developing social skills such as empathy have been components of many intervention or prevention programs aimed at reducing bullying or victimization in schools (Gaffney et al., 2021). For example, findings of the anti-bullying Finnish program KiVa suggest higher affective empathy levels for children in the experimental group, regardless of age, status, prior empathy levels, or classroom bullying norms (Garandeau et al., 2022). The KiVa anti-bullying program was also effective in reducing both peer victimization and bullying (Kärnä et al., 2013). Another eleven-week empathy training program successfully reduced bullying behaviors and raised empathic skills in children (Sahin, 2012). A similar example was offered by Palade and Pascal (2023), whose five-day intensive empathy training program efficiently increased empathy and reduced verbal bullying in classrooms where the teacher was present during the intervention.

Previous examples indicate that interventions, including empathy training (Gaffney et al., 2021), can effectively reduce bullying and victimization. Although we know empathy's potential in these interventions, we know little about the mechanisms underlying this association. One potential candidate are social and emotional competencies (SEC). According to The Collaborative for Academic, Social and Emotional Learning (CASEL) (CASEL, 2013), social and emotional competencies reflect skills allowing people to recognize, understand, regulate, and express emotions in the larger context of social interactions, all while making responsible decisions. There are five interconnected areas in which SEC can be categorized: self-awareness, self-management, social awareness, relationship skills, and responsible decision making. Social-emotional learning interventions aiming to improve SEC are effectively enhancing social functioning, social inclusion, and school well-being in students (Hassani, 2024). Furthermore, a recent review of meta-analyses concerning universal school-based social-emotional learning programs confirmed statistically significant results, including better SEC, prosocial behaviors, academic success, lower levels of conduct problems, and emotional distress (Durlak et al., 2022).

General, cognitive, and affective empathy have been positively associated with total SEC scores in several studies (Ferreira et al., 2024; Hirn et al., 2019; Llorent et al., 2020, 2021). In younger children, positive empathy, meaning expressing happiness resulting from understanding another person's positive affect, was positively associated with social competence at the first measurement and at the second time point one year later (Sallquist et al., 2009). More empathic children demonstrate a better understanding of socially sensitive behavior, such as shyness and aggression, than their less empathic peers, which might indicate better social competence (Findlay et al., 2006). In adolescents, changes in empathy predicted individual differences in social competencies twenty-three years later (Allemand et al., 2015). Additionally, children's social competencies mediate the relationship between parents' cognitive empathy and children's emotional and behavioral problems (Meng et al., 2020). Given that affective and cognitive empathy are heritable traits (Abramson et al., 2020), children's empathy could also predict better SEC for themselves.

SEC is of great importance not only for the healthy development of children and important life outcomes in adulthood but also plays a relevant role in behavioral change processes (Domitrovich et al., 2017). Interventions aimed at developing better SEC in children efficiently raise prosocial behaviors, such as helping, comforting, and cooperating (Schonert-Reichl et al., 2012). Results are consistent with meta-analytic data, demonstrating overall improvement in social skills, mental health, and prosocial behavior (Sklad et al., 2012). Indeed, adolescents who act in a prosocial manner are more socially accepted by their

peers and have better peer relationships (Zorza et al., 2013). Additionally, victim-oriented defending, meaning consoling or comforting bullying victims, is positively associated with social acceptance and perceived friendship, which are indicators of SEC (Reijntjes et al., 2016). At the other end of the spectrum, children with aggressive behaviors, for example, bullies and bully-victims have lower levels of SEC in comparison to uninvolved children (Zych et al., 2018). Coelho and Sousa (2021) confirmed better SEC scores for adolescents uninvolved in bullying.

Current study

Evidence thus far shows that higher levels of empathy are associated with peer defending (Ma et al., 2019). Social and emotional skills are positively related to general and specific types of empathy (Ferreira et al., 2024), and are relevant to aggressive and prosocial behaviors during childhood development (Belacchi et al., 2022). Peer status or peer acceptance has been identified as a significant mediator in the relationship between empathy and defending (Zhou et al., 2024). In younger children, being liked by peers was related to more prosocial behaviors and higher levels of emotional competencies (Farina & Belacchi, 2022). These interactions act as a positive feedback loop, encouraging children to further act in prosocial ways. Future interventions concerning bystander behavior and defending victimized peers could benefit from a better understanding of the mechanisms on which these relationships are based. However, we still lack extensive knowledge of how empathy promotes prosocial behavior. We propose that SEC could function as a bridge between empathy and defending, representing the missing link that contributes to empathy's involvement in defending and prosocial behavior. Accordingly, the current study aims to investigate at two time points the role of SEC as a mediator in the relationship between empathy and defending. More specifically, the study's first objective is to test whether SEC mediates the relationship between cognitive empathy and defending, and the second objective is to test SEC's role as a mediator between affective empathy and defending behavior in a sample of Romanian adolescents.

2. METHOD

2.1. Participants

The total sample included 695 participants. Of these, 414 completed both time points and 281 completed the scales only at T1. The number of total participants at T1 was 695, with a mean age of 12.72 (SD = 1.14). Some adolescents

(n = 19) with data at both time points were excluded from the analysis due to invalid responses, meaning all items were answered with one rating such as 1 or 3, regardless of item content. Missing data were managed by full information maximum likelihood (FIML), which showed superior results compared to other techniques such as listwise deletion or mean imputation (Enders, 2001). This enabled us to include participants with scores for only the first time point. Demographic data were only collected at T1. Gender distribution at T1 reflects a majority of boys, with a percentage of 50.94%. Most adolescents were from urban areas (65.75%). Mean age of participants at T2 was 13.20 years (SD = 0.89). In this portion of the sample, 48.30% were boys. Both participants at T1 and T2 had ages ranging from 11 to 15.

2.2. Procedure

Ten schools across four counties from Romania were invited to participate in the study. Informed consent was obtained from parents after they were informed of the study. Only adolescents whose parents signed the informed consent were included in the sample. Additionally, assent from the adolescents was also requested. We first collected data between May and June 2022 (T1), and then, the second time, between November 2022 and January 2023 (T2). We informed all adolescents about the confidentiality of their responses and their right to withdraw from the study at any time. Data were collected online during school hours under the supervision of a trained member of the research team. Adolescents completed an online form containing all questionnaires. The questionnaires were completed in their classrooms or in the computer science labs using their phones or the laptops made available by the school. All three instruments were collected at both time points.

2.3. Instruments

The Basic Empathy Scale (BES) (Jolliffe & Farrington, 2006) was used to measure cognitive and affective empathy in adolescents. It has 20 items, 9 for cognitive empathy and 11 for affective empathy. It can also provide a total empathy score. Both subscale and total empathy scores were calculated by summing all items. Each item is rated on a five-point Likert scale, from 1 representing "Strongly disagree" to 5 meaning "Strongly agree". Of the 20 items, eight were reverse-scored. A representative example of a cognitive item is: *"When someone is feeling 'down' I can usually understand how they feel."*, and an example of an affective item is: *"I tend to feel scared when I am with friends who are afraid."*. In

our sample, the Cronbach's alpha coefficient at T1 was .72 for cognitive empathy and .71 for affective empathy, respectively, while for T2 it was .76 for both cognitive and affective empathy.

The Student Bystander Behavior Scale (SBBS) (Álvarez-García et al., 2021) was used to assess different types of bystander involvement, such as the defender of the victim, pro-bully, or passive behavior. In the current study, we used only the defender subscale of the instrument. The scale is composed of 10 items, each evaluated dichotomously by answering "Yes" or "No". Adolescents are first presented with the definition of bullying and then asked how they reacted in that situation or how they would react in such a situation. A score for defending was obtained by summing all the affirmative answers. Scores could range from 0, reflecting no defending behavior, to 4, representing a more active role as a defender. One example of an item is: *"Talk to the bully later to get them to stop."*. The internal consistency in our sample for T1 was .56 and for T2 .67.

The Social and Emotional Competencies Questionnaire (SEC-Q) (Zych et al., 2018) was used to assess adolescents' social and emotional competencies. It contains 16 items distributed across four subscales: self-awareness, self-management and motivation, social-awareness and prosocial behavior and decision making. Each item is rated on a five-point Likert scale, from 1 representing *"Strongly disagree"* to 5 meaning *"Strongly agree"*. The questionnaire offers the possibility of calculating both subscale scores and a total social and emotional competencies score by summing the scores of each item corresponding to a subscale or all items for the total score. An illustrative example of an item is: *"I know how my emotions influence what I do."*. For this study, we only used the total score for social and emotional competencies. Internal consistency for T1 and T2 was .88, indicating excellent reliability.

2.4. Data analysis

Descriptive preliminary analysis included mean, standard deviation, and correlations between all variables at both time points, and were analyzed using RStudio (RStudio Team, 2024). Reliability analyses were performed using the Jamovi (version 2.3). For the study's main aim, respectively, to test the mediation effect of social and emotional competencies on the relationship between empathy and defending, a cross-lagged panel model for a half-longitudinal design was used. This type of design allows causal relationships to be revealed in datasets with only two time points (Preacher 2015). Although it makes it possible to test for indirect effects, it limits the ability to directly test for stationarity and the stability of the model over time. The half-longitudinal design was introduced by Cole and Maxwell (2003) and estimates the indirect effect by multiplying two

paths, a and b. The first one, path "a", is the effect of the predictor, in this case, first cognitive, then affective empathy at T1 on the mediator, social and emotional competencies at T2. The second one, the "b" path, is the effect of the mediator at T1 on the criterion, specifically peer defending at T2. Although this model cannot directly test for stationarity, it is an important assumption. We used the robust maximum likelihood estimator to adjust for non-normal data to estimate the regression model. The Henze-Zirkler test for multivariate normality at both time points was non-significant, meaning that our data did not fit the normality assumption (Henze & Zirkler, 1990). We also examined the skewness and kurtosis for each variable. Skewness values ranged between -0.09 and -0.87, and kurtosis values between -0.89 and 1.49, considered within normal limits (Lei & Lomax, 2005). For the assessment of indirect effects, maximum likelihood bootstrapped mediation analysis was used, with 3000 iterations. Confidence intervals of 95% were generated, and an indirect effect was considered significant if the confidence intervals did not contain 0 (Preacher & Hayes, 2004). Because this model has zero degrees of freedom, the fit indices are rendered irrelevant.

3. RESULTS

3.1. Descriptive statistics

Table 1 presents descriptive statistics and correlations between all variables at the first and second time points. All correlations were positive and significant, as expected, except for the correlation between affective empathy and SEC at both time points and the correlation between cognitive empathy and defending both at T2, which were not significant.

Table 1. *Means, standard deviations, and correlations between variables*

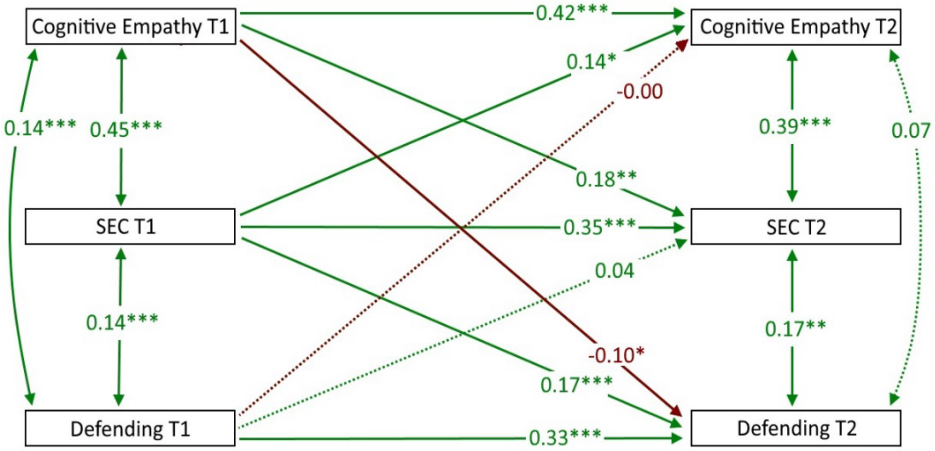
Variable	*M*	*SD*	1	2	3
First time point (T1)					
1. SEC T1	61.93	11.10			
2. Cognitive Empathy T1	35.78	5.45	.45**		
3. Affective Empathy T1	34.62	7.20	.01	.26**	
4. Defending T1	2.56	1.25	.14**	.14**	.15**
Second time point (T2)					
1. SEC T2	61.19	11.06			
2. Cognitive Empathy T2	35.83	5.52	.49**		
3. Affective Empathy T2	34.27	7.59	.08	.26**	
4. Defending T2	2.50	1.37	.22**	.09	.15**

Note. M and *SD* are used to represent mean and standard deviation, respectively. *indicates $p < .05$. ** indicates $p < .01$. SEC= Social and Emotional Competencies

3.2. Half-longitudinal mediation model with cognitive empathy

In order to investigate the first objective of our study, respectively, to test the effect of SEC on the relationship between empathy and defending, we used a cross-lagged half-longitudinal design to test mediations with two time points, as portrayed in Figure 1.

Figure 1. *Cross-lagged panel model for a half-longitudinal design for testing the indirect association between cognitive empathy and defending via social and emotional competencies*



Note. T1= Time 1, T2 = Time 2, SEC = Social and Emotional Competencies, * indicates $p < .05$. ** indicates $p < .01$. *** indicates $p < .001$, continuous lines represent significant relationships, dotted lines represent non-significant relationships, green lines represent positive relationships, and red lines represent negative relationships.

We first tested the "a" path of the mediation model, regressing SEC at T2 on cognitive empathy at T1. Indeed, cognitive empathy at T1 predicted higher levels of SEC at T2, β=0.18, p=.003. For the second path, "b", we regressed defending at T2 on SEC at T1. SEC at T1 positively predicted defending at T2, β=0.17, p<.001. Lastly, the indirect effect of the interaction between paths "a" and "b" was also statistically significant, β=0.03, p=.019, confirming the indirect mediation effect. The results of each regression and indirect effects are presented in Table 2. There was a significant negative direct effect of cognitive empathy at T1 on defending behavior at T2, β=-0.10, p=.031.

Table 2. *The standardized coefficients, along with their 95% bootstrap confidence interval*

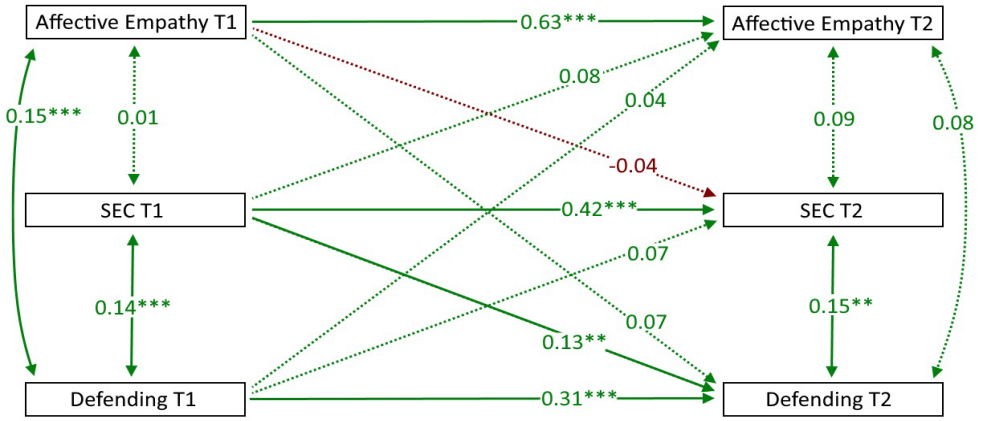
Predictor	Criterion	β	95% CI Lower	95% CI Upper	*z*	*p*
SEC T1	SEC T2	0.35	0.23	0.48	5.52	< .001***
Cognitive Empathy T1	Cognitive Empathy T2	0.42	0.28	0.57	5.69	< .001***
Defending T1	Defending T2	0.33	0.26	0.47	6.78	< .001***
Cognitive Empathy T1	Defending T2	-0.10	-0.05	-0.00	-2.15	.031*
Cognitive Empathy T1	SEC T2	0.18	0.13	0.62	2.94	.003**
Defending T1	Cognitive Empathy T2	-0.00	-0.37	0.34	-0.06	.954
Defending T1	SEC T2	0.04	-0.45	1.11	0.81	.420
SEC T1	Defending T2	0.17	0.01	0.03	3.53	<.001***
SEC T1	Cognitive Empathy T2	0.14	0.01	0.13	2.36	.019*
Indirect effect	*a1*b1*	*0.03*	*0.00*	*0.02*	*2.35*	*.019**

Note. * $p < .05$. **, $p < .01$. ***, $p < .001$, T1 = time 1, T2 = time 2, SEC = Social and Emotional Competencies, CI = Confidence Interval, a1 = Regression coefficient for the effect of cognitive empathy at T1 on SEC at T2, b1 = Regression coefficient of SEC at T1 on defending at T2, β = Standardized Beta Coefficient.

3.3. Half-longitudinal mediation model with affective empathy

The mediation model based on affective empathy is shown in Figure 2. The "a" path, specifically, the regression of SEC at T2 on affective empathy at T1, yielded non-significant results, meaning that affective empathy at T1 does not predict SEC at T2, β=-0.04, p=.146. However, the "b" path, respectively, the regression of defending at T2 on SEC at T1 was significant β=0.13, p=.002. SEC at T1 positively predicted defending at T2. The indirect effect, meaning the interaction between paths "a" and "b", was also non-significant, β=-0.00, p=.467, indicating no indirect effect of affective empathy on defending through SEC. Table 3 summarizes the results of the regression analysis of this model. Affective empathy at T1 had no direct effect on defending at T2, β=0.07, p=.146.

Figure 2. *Cross-lagged panel model for a half-longitudinal design for testing the indirect association between affective empathy and defending via social and emotional competencies*



Note. T1= Time 1, T2 = Time 2, SEC = Social and Emotional Competencies, * indicates $p < .05$. ** indicates $p < .01$. *** indicates $p < .001$, continuous lines represent significant relationships, dotted lines represent non-significant relationships, green lines represent positive relationships, and red lines represent negative relationships.

Table 3. *The standardized coefficients, along with their 95% bootstrap confidence interval*

Predictor	Criterion	β	95% CI Lower	95% CI Upper	*z*	*p*
SEC T1	SEC T2	0.42	0.31	0.53	7.36	< .001***
Affective Empathy T1	Affective Empathy T2	0.63	0.58	0.76	14.12	< .001***
Defending T1	Defending T2	0.31	0.23	0.45	6.18	< .001***
Affective Empathy T1	Defending T2	0.07	-0.01	0.03	1.45	.146
Affective Empathy T1	SEC T2	-0.04	-0.20	0.08	-0.78	.436
Defending T1	Affective Empathy T2	0.04	-0.22	0.75	1.07	.283
Defending T1	SEC T2	0.07	-0.20	1.36	1.48	.138
SEC T1	Defending T2	0.13	0.01	0.03	3.09	.002**
SEC T1	Affective Empathy T2	0.08	0.00	0.11	1.96	.050
Indirect effect	*a1*b1*	*-0.00*	*-0.00*	*0.00*	*-0.73*	*.467*

Note. * indicates $p < .05$. ** indicates $p < .01$. *** indicates $p < .001$, T1 = time 1, T2 = time 2, SEC = Social and Emotional Competencies, CI = Confidence Interval, a1 = Regression coefficient for the effect of affective empathy at T1 on SEC at T2, b1 = Regression coefficient of SEC at T1 on defending at T2, β = Standardized Beta Coefficient.

4. DISCUSSION

This study aimed to test the mediating effect of SEC on the relationships between cognitive, respectively affective empathy, and defending behaviors in a cross-lagged half-longitudinal study. The results concerning the first model, including cognitive empathy, confirmed the mediation hypothesis, stating that cognitive empathy is indirectly associated with defending through SEC. Adolescents with higher cognitive empathy have higher levels of SEC and are more likely to be involved in defending behaviors. Several studies have shown that empathy and defending are indirectly related through other factors, such as motivation to defend (Longobardi et al., 2020), peer acceptance (Kim & Park, 2021) and student-teacher relationship (Rizkyanti et al., 2021), but only the latter included cognitive empathy. The indirect effect of cognitive empathy on defending is consistent with results indicating that cognitive empathy contributes more to defending than affective empathy (Rizkyanti et al., 2021). Other studies have highlighted that cognitive empathy is more strongly associated with SEC than affective empathy is (Hirn et al. 2019; Llorent et al. 2020). Children with high cognitive empathy are more likely to notice bullying events, accept responsibility to intervene, and report knowledge on how to intervene (Fredrick et al., 2020). Additionally, SEC at the first time point positively predicted defending six months later at the second time point. Literature confirms that perceived social competence is associated with higher levels of autonomous prosocial motivation, which was later associated with greater prosocial behavior (Collie, 2022). Furthermore, meta-analytic data on the follow-up effects of interventions aimed at promoting social and emotional competencies indicate that these interventions contribute to more prosocial attitudes and behaviors among children (Taylor et al., 2017). Adolescents with high cognitive empathy might be more likely to defend their peers, especially due to better social skills that allow them to navigate difficult situations such as bullying.

Regarding the significant negative direct effect of cognitive empathy on defending, our results are in line with those observing that only affective empathy, not cognitive empathy, was predictive of defending behavior both over time (Van Der Ploeg et al., 2017) and cross-sectionally (Belacchi & Farina, 2012). One possible explanation could be that cognitive empathy alone might not be enough to directly influence prosocial behavior. For example, Belacchi and Farina (2012) showed that children with high affective, not cognitive empathy are more emotionally connected to others, which in turn is associated with more prosocial behavior. At the same time, there are no differences in

cognitive empathy between aggressive and non-aggressive children (Shechtman, 2002; van Zonneveld et al., 2017). Our defending measurement included all defending scores and not only those with higher defending levels. Therefore, it could also take into account adolescents who, although they have higher levels of cognitive empathy, do not involve themselves in prosocial actions such as peer defending. Additionally, according to interdependence theory (Meter & Card, 2015), the decision to act in unjust social situations is influenced not only by individual factors, but also by social dynamic characteristics, such as social status, social reward, or avoidance of harm. Adolescents with high cognitive empathy are less likely to defend their peers and more likely to stand passively when the bully is perceived as popular (Choi & Park, 2021). When the bully was not considered popular, adolescents were more likely to defend their peers, indicating that the decision to intervene or not might be influenced by social factors, as well as individual ones. Taking into consideration both individual and social factors, adolescents with high cognitive empathy might choose not to defend and even avoid defending their peers if they evaluate those situations as threats to their well-being or lacking benefits or rewards.

The second-tested half-longitudinal mediation model, including affective empathy, was not significant. First, affective empathy at T1 did not predict social and emotional competencies at T2. Cognitive and affective empathy have different genetic and environmental origins; specifically, affective empathy is more heritable and cognitive empathy is influenced by the shared family environment (Abramson et al., 2020). Therefore, it is plausible to observe dissimilar patterns across relationships with the other constructs. For example, affective and cognitive empathy relate differently to emotion regulation (Thompson et al., 2022). Higher affective empathy was related to heightened emotional interference tasks, whereas no such relationship was found for cognitive empathy. These findings suggest that greater affective empathy indicates increased emotion regulation difficulties. Concurrently, interpersonal emotion regulation predicts social competencies (Malkoç et al., 2019), and longitudinal data have shown cascading and reciprocal effects between SEC and emotional regulation (Blair et al., 2015). SEC was also positively associated with emotional regulation strategies, such as cognitive reappraisal and expressive suppression (Chen et al., 2024). Furthermore, emotion regulation skills are an important part of social and emotional learning interventions such as RULER, a school-based approach for developing SEC in children (Hoffmann et al., 2020).

Taking all information into consideration, it might be that affective empathy is less compatible with social and emotional competencies since it is not as strongly related to skills such as good emotion regulation strategies,

which are an important part of SEC and are necessary to prosocial behavior. Affective empathy has been previously linked to internalizing symptoms (Bray et al., 2021), and has been shown to predict greater affective distress than cognitive empathy. Decety and Jackson (2004) proposed that, for children with high levels of affective empathy, good emotion regulation skills might be required to manage personal emotional distress related to their empathy responses. This might later allow them to act in prosocial ways, in this case defending victimized peers. Such data could potentially explain why, in our study, affective empathy at the first time point did not predict defending at the second time point and why there was no significant mediation effect of SEC on the relationship between affective empathy and defending.

Implications

The findings of the current study have several theoretical and practical implications. From a theoretical perspective, they broaden our understanding of the relationship between empathy and defending behavior. Following empirical and theoretical points of view (Decety & Holvoet, 2021; Nummenmaa et al., 2008), it is important to acknowledge and view cognitive and affective empathy separately, as they have different routes regarding their effects on defending behavior. Our results confirm that SEC represent one intermediate factor, a mechanism through which we can explain cognitive empathy's indirect influence on defending.

From a practical perspective, our data contribute to the improvement of future interventions or school-based prevention programs aimed at reducing bullying and victimization by developing greater empathy levels in adolescents for their victimized peers. First, it would be helpful to consider more personalized programs by identifying whether the included adolescents have deficiencies in empathy or SEC, and specifically, which type of empathy should be further encouraged. Furthermore, future interventions could also include components based on social and emotional learning strategies aimed at developing SEC. Mediators, moderators, or other mechanisms of change, such as SEC, should be routinely analyzed in intervention studies in which better outcomes for the experimental groups are confirmed. One study found that affective empathy, but not cognitive empathy, is associated with somatic complaints, suggesting that interventions promoting SEC could help ameliorate other difficulties, such as somatic complaints (Espejo-Siles et al., 2020) or other factors that could hinder helping behavior.

Limitations and future directions

The current study presents certain limitations that need to be considered. Our design was limited to only two time points, allowing us to test a half-longitudinal cross-lagged mediation model and not a full cross-lagged panel model, thus necessitating measurements at three time points. This has implications for interpreting causality in identified relationships; therefore, we can infer causality only partially. Another limitation was the use of self-reported data. Adolescents could offer socially desirable answers by overestimating or underestimating empathy levels, SEC, or the frequency of defending behaviors, which could skew our data.

Future research could benefit from exploring multiple trajectories. First, multiple bullying roles could be included in further analysis, such as victims, bullies, and other bystanders, such as non-involved peers or adolescents supporting the bully. Huitsing et al. (2014) revealed that victims with the same aggressor tend to defend each other. This indicates that some adolescents have multiple bullying roles, which in turn could lead to different prediction patterns in the relationships among types of empathy, SEC, and defending. By involving multiple roles, interventions can also prevent overreliance on defenders (Downes & Cefai, 2019), especially in light of findings showing that defenders are at risk of developing mental health issues, for example, psychosocial difficulties (Lambe et al., 2017). Moreover, future studies could address multiple mediators and moderators to further expand the relationship between each type of empathy and defending. An example of a potential mechanism is the ability to regulate emotions or specific emotion regulation strategies. If proven to be relevant, developing such abilities could help mitigate the effect of the emotional distress created, for example, when experiencing affective empathy on prosocial actions. Finally, future interventions could include SEC components in interventions aimed at reducing victimization and bullying, besides components aimed at raising empathy levels in bystanders.

5. CONCLUSIONS

In summary, the current study aimed to test the indirect effect of SEC on the relationships between first cognitive empathy and second affective empathy and defending behavior in a sample of Romanian adolescents. The results of the half-longitudinal cross-lagged mediation design revealed a significant indirect effect of SEC on the relationship between cognitive empathy and defending. In this model, cognitive empathy at T1 positively predicted SEC at T2 and SEC at

T1 positively predicted defending at T2. No significant direct effects of cognitive empathy at T1 on defending at T2 were identified. The mediation model including affective empathy yielded no significant indirect effects. The only significant relationship was between SEC at T1 positively predicting defending at T2. Findings confirm that SEC are a significant mechanism for defending behavior but only for cognitive empathy. Our results have implications for future theoretical developments and upcoming interventions meant to reduce bullying and victimization by bystander involvement.

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Friendship and Wellbeing in Emergent Adults. A Systematic Review

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ABSTRACT. The present study examines the relationship between friendship quality and well-being in emerging adults, focusing on the psychological and social dimensions of these interactions. As individuals transition into adulthood, peer relationships play a crucial role in shaping emotional and mental health outcomes. This research explores key factors such as emotional support, social connectedness, and conflict resolution within friendships, analyzing their impact on overall well-being. Drawing from theoretical frameworks in developmental psychology and social support theory, the study employs both quantitative and qualitative methodologies to assess how variations in friendship dynamics influence self-esteem, stress levels, and life satisfaction. Findings indicate that high-quality friendships characterized by trust, emotional closeness, and mutual support are strongly associated with positive well-being indicators. Conversely, friendships marked by high levels of conflict or lack of reciprocity contribute to increased stress and lower psychological health. The study also considers the moderating effects of external stressors, such as academic pressures and social media influences, on these relationships. These findings underscore the significance of fostering strong and supportive friendships during early adulthood to promote psychological resilience and overall life satisfaction. The study contributes to the broader discourse on social relationships and mental health, highlighting the critical role of friendships in shaping the well-being of emerging adults.

Keywords: friendship, well-being, emerging adulthood, social support, psychological health

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INTRODUCTION

1.1. Problem Presentation

The emerging adulthood stage is characterized by identity exploration, instability, self-focus, the feeling of living between two periods, and optimism (Arnett, 2015). While the beginning of the emerging adulthood stage is well defined, around the age of 18, its end is not determined by biological age, but rather by the fulfillment of criteria to be considered an adult: taking responsibility for oneself, making independent decisions, and financial independence (Arnett, 2015). These criteria are generally met between the ages of 25 and 29.

Looking at the media, with the popularity of shows like "Friends," "How I Met Your Mother," and "The Big Bang Theory," and reflecting on our own life experiences during college or early jobs, we observe that during our journey of identity exploration, one of the most important witnesses are our friends, who become an essential source of fun, emotional support, and well-being.

Well-being is a complex concept that involves both positive and negative emotional responses from individuals, global evaluations of life satisfaction, and the aspects of life considered when determining life satisfaction: work, family, health, leisure, finances, and relationships with oneself and with the social group (Diener, 1999). According to Ryff (1989), the dimensions of well-being include: autonomy, positive relationships with others, environmental control, life purpose, and personal development. In his book *Flourish*, Martin Seligman (2011) describes the PERMA model, which includes five dimensions: positive emotions, engagement, relationships, meaning, and accomplishment.

It is noticeable that one of the common dimensions across all three models is relationships with others. Individuals who have close relationships in their lives report more positive feelings and handle challenges such as grief, job loss, or illness better (Myers, 2000). Among the most important relationships for emerging adults are friendships. According to Hays (cited in Demis & Özdemir, 2010), friendship is "a voluntary interdependence between two people over time that aims to facilitate the achievement of the socio-emotional goals of the individuals and can involve varying degrees of company, intimacy, and mutual support."

In this research, we have examined the relationship between friendship and well-being in emerging adults in the form of a systematic review.

1.2. Presentation of Relevant Literature

1.2.1. The Role of Friendship in an Individual's Life

Depending on gender, age, and the culture we belong to, we define friendship differently (Rybak & McAndrew, 2006). Among the terms most commonly used by study participants to define friendship are self-disclosure levels, sociability, the level of support provided in a relationship, and shared interests (Adams et al., 2000).

The deep structure of a friendship relationship is based on reciprocity, while surface structures change according to the developmental tasks specific to each stage we go through (Hartup & Stevens, 1997). According to these authors, the impact of friendship on human development and well-being depends on the traits of our friends and the quality of the relationship, whose dimensions include: content (what the individuals do together), constructiveness (how conflicts are managed, using negotiation techniques or asserting the power of one of the individuals), closeness (the time spent together and sharing important personal information), symmetry (friends exert similar or comparable influence on one another), and emotional character (the extent to which friends support each other).

Mendelson & Aboud (1999) identified six functional components of adult friendships that determine the quality of the friendship. The first is stimulating company. For friendships among women, the main activity is conversation, while for men, the central aspect of friendship is engaging in recreational activities such as sports or hobbies (Fehr, 1996).

The second function of friendship is the support provided. Support can take several forms: emotional help, services, companionship, financial help, or information for securing housing or a job (Wellman & Wortley, 1989). For emerging adults, emotional support provided by friends is a key strategy in managing the smaller or larger difficulties they face. When going through tough times, they consider emotionally focused goals, such as listening when the other wants to vent, more important than problem-focused goals, such as offering advice or actual support in solving issues (Samter et al., 1997). Another form of emotional support is emotional regulation, which is more effective in the presence of friends (Morawetz et al., 2021). In a study conducted by Morawetz (2021) with 70 emerging adults, it was shown that individuals' ability to emotionally regulate is influenced by the social support provided by a friend, even if the friend is not physically present, whereas emotional regulation in the presence of a stranger is less effective than when done alone.

The third function of friendship is intimacy. According to Monsour (1992), intimacy in a friendship relationship primarily involves self-disclosure, broadly understood as sharing personal information, thoughts, and feelings, and emotional expressiveness, understood as affection, compassion, and lack of judgment regarding information already disclosed. Generally, intimacy is an attribute of long-term friendships, with major life transitions being an important catalyst for intimacy. However, intimacy is not built only by these transitions but also by sharing routines, moments from everyday life, systems of thought, and memories (Policarpo, 2016).

The fourth function of friendship is the trust alliance, which refers to trust, loyalty, and continuous availability in a friendship. Trust between individuals is built based on certain personal inputs of each individual (the disposition to trust, the characteristics of the other, the nature of the relationship, specific concerns in the domain, context) from which they form beliefs about the trustworthiness of the other person. These beliefs influence the decision to trust. When the belief is positive, it leads to actions that test the trust, and feedback from these actions will influence inputs (Six & Latusek, 2023). Individual dispositions toward trust are stable across situations and vary from person to person depending on personality, culture, and developmental experiences (Mayer et al., 1995). The characteristics of the other person influence the level of trust one will grant. According to Mayer's model (1995), trust depends on skills, good intentions, and integrity. Depending on the other person's skills, trust can be granted or not. For example, a person may be very good at keeping secrets but pay little attention to details. Trust can be given that they will keep a secret, but not that they will correctly draft an important document on the first try. Similarly, in friendships, we trust different friends with different parts of our identity and life based on their skills. Good intentions involve the presence of a positive orientation of the one who grants trust toward the one who receives it, in the absence of any extrinsic benefit. Integrity involves the existence of similar principles proven through past actions between the one who grants trust and the one who receives it.

The fifth function of friendship is emotional safety. This refers to the trust and comfort that in a challenging situation, a friend will not highlight the individual's weaknesses or betray their trust (Mendelson & Aboud, 1999).

The sixth function of friendship is self-validation, referring to the role individuals assign to friends in maintaining a positive self-image. According to Wright (1978), individuals maintain friendships because they provide benefits such as: utility (e.g., financial resources in times of need), self-affirmation (friends create contexts where one can express their qualities), ego support (emphasizing success and ignoring failure), stimulation (suggesting new ideas to one another), and safety.

1.2.2. The Quality of Friendship Relationships in Adults

Friendships play an important role in an individual's life throughout their lifespan. Depending on the stage of development we are in, the quality of the friendships we have influences other aspects of our lives. In childhood, low-quality friendships are characteristic of children who are less accepted by their peers (Brendgen et al., 2005), and lack of friends during adolescence correlates with alcohol and drug use, anxiety, antisocial behavior, and depression (Samter, 2003). As adults, the quality of friendships with colleagues influences job satisfaction and performance (Sias et al., 2004).

The emerging adulthood period is marked by multiple transitions: from leaving the parental home to living with roommates or friends, with a romantic partner, or alone, from being a student to being an employee, from transient romantic relationships to stable romantic relationships. These transitions occur at different times, with varying impacts and durations for each individual (Ridfuss, 1991). During all these transitions, in the absence of the family of origin or the family created by each individual, friends become, especially for women, the chosen family (Bellotti, 2008). Major life changes in emerging adulthood reduce the time allocated to friendships, and most people maintain relationships within a small network of friends, with an average of three close friends (Pezirkianidis et al., 2023). In this context, the quality of the relationship with the best friend has a greater impact on an individual's life during the emerging adulthood stage than in other stages of life.

In the longitudinal study conducted by Langheit & Poulin (2022) on 363 participants aged 19 to 30, examining changes in the quality of the relationship with the best friend during the emerging adulthood period, a general decline in friendship quality during this period is observed. However, company and trust alliance increase at the beginning of the period and remain important throughout the entire decade. Study participants changed their best friend an average of three times due to life changes they went through. Since this is the period when long-term romantic relationships are established and relationships with the family of origin move beyond the turmoil of adolescence, intimacy with the best friend decreased from the age of 19 to 30, as participants had more close relationships in which they self-disclosed and were accepted without judgment. Additionally, a reduction in conflicts with the best friend is observed, which is also explained by fewer interactions and the increase in emotional regulation skills and the ability to handle potentially conflictual situations.

To ensure the survival of the relationship with the best friend and to gain the desired benefits, individuals resort to strategies to maintain the relationship. The main strategies include: positivity (engaging in behaviors that

make interactions pleasant between friends), support, openness (meaningful conversations, self-disclosure), interaction (common activities), avoiding topics that could generate conflict, antisocial strategies such as deception, using humor, engaging social network support to help a friend solve a problem, and constructive conflict management (Perlman et al., 2014).

1.2.3. Well-being

The main approaches to well-being are the hedonic perspective and the eudaimonic perspective, both of which have deep roots in ancient philosophical thought. The Greek philosopher Aristippus considered that the purpose of life is to experience the maximum amount of pleasure, while Aristotle believed this perspective makes a person the slave of their desires. For him, true happiness is found in the expression of virtue, in doing what is necessary to be done (Ryan & Deci, 2001).

Keys (2002) proposed an exhaustive model of mental well-being that takes into account both major approaches to well-being. Subjective well-being, inspired by the hedonic perspective, involves the presence of positive affect, satisfaction, and the absence of negative affect (Diener et al., 1999). Psychological well-being, representing the private aspect of eudaimonic well-being, is captured by Ryff (1989) and consists of the following dimensions: autonomy, positive relationships with others, environmental mastery, purpose in life, and personal growth. The social aspect of eudaimonic well-being is described by Keys (1998) as having five dimensions: social integration, social contribution, social coherence, social actualization, and social acceptance.

Subjective well-being represents a general area of scientific interest rather than a clearly defined specific construct. It includes affective elements (positive and negative affect) and cognitive elements (life satisfaction and the domains to which this satisfaction refers). Positive affect involves emotions such as joy, enthusiasm, satisfaction, pride, affection, happiness, and ecstasy. Negative affect involves feelings of guilt and shame, sadness, anxiety and worry, anger, stress, depression, and envy. Life satisfaction refers to the desire to change life, satisfaction with current life, satisfaction with the past, satisfaction with the future, and the perspective of one's partner on their life. The domains that influence life satisfaction include work, family, leisure, health, finances, self, and the group of belonging. Diener (1984) analyzed the affective elements of subjective well-being through two studies. In Study 1, 72 participants read stories designed to produce variable levels of positive or negative affect, while in Study 2, 42 participants monitored their emotions at emotional moments throughout the day for six weeks. Data analysis revealed the following patterns: people do not simultaneously experience intense positive and negative affect; if one affect

is at a low intensity, the other can be of any intensity; emotions with similar hedonic value tend to appear together; participants defined both positive and negative affect as emotional, and subjects reported moments when they felt both positive and negative affect simultaneously at moderate intensity.

Among the most commonly used methods to measure subjective well-being are the Satisfaction with Life Scale, which measures global life satisfaction without analyzing constructs of positive affect, negative affect, or loneliness (Diener et al., 1985), the Positive and Negative Affect Schedule (PANAS), which contains scales for states, each with 10 items (Watson et al., 1988), and the Scale of Positive and Negative Experience (SPANE), which contains 12 items but measures a wide range of positive and negative emotions and experiences, based on the duration of their experience over the last 4 weeks (Diener, 2010).

Research in the field of subjective well-being has focused on identifying predictors for subjective well-being, analyzing affective and cognitive dimensions, and the contribution of contextual factors (life events and socio-demographic variables). Galinha & Pais-Ribero (2011) identified life satisfaction in various domains, negative affect, and positive affect as predictors of subjective well-being. Regarding the cognitive dimension of subjective well-being, depression was the main predictor, followed by comparison standards, confirming earlier research that suggests life satisfaction involves both cognitive and affective processes, is a function of comparing life achievements with personal standards, and is primarily promoted by individuals to prevent depression (Galinha & Pais-Ribero, 2011).

While the hedonic perspective on well-being focuses on the pursuit of pleasure, the eudaimonic perspective centers on fulfilling human potential. The private and personal aspect of eudaimonic well-being is captured by Ryff (1989) in psychological well-being, for which she identified five dimensions.

The first is self-acceptance, which involves maintaining a positive attitude toward oneself and one's past experiences. Unconditional self-acceptance involves accepting oneself without worrying about the withdrawal of love, respect, or validation from others (Hill et al., 2008).

The second dimension is positive relationships with others, which centers on the ability to love. This dimension reflects an individual's ability to develop and maintain quality relationships based on trust, affection, empathy, and mutual support.

The third dimension of psychological well-being is autonomy. An autonomous person has an internal locus of self-evaluation, comparing themselves to their own standards and not constantly seeking approval from others. Autonomy also involves liberation from collective fears and beliefs, which provides freedom from the norms governing everyday life. Autonomy is essential for initiating and regulating behaviors through which all other needs are fulfilled (Ryan & Deci, 2007, p. 250).

Environmental mastery is the fourth dimension proposed by Ryff and refers to the individual's ability to create or choose environments that fit their psychological condition. A person with a high score on this dimension is competent in managing their environment, controls a wide variety of external activities, makes effective use of opportunities, and either creates or chooses contexts compatible with their personal values. A person with a low score on this dimension struggles to manage daily life, feels incapable of changing or improving their context, does not see opportunities, and does not feel in control of the external world (Ryff, 1989).

The penultimate dimension proposed by Ryff is purpose in life, which means that an individual has goals, intentions, and a sense of direction, contributing to the feeling of living a meaningful life (Ryff, 1989). It is natural for life goals to change over time, but it is essential that they exist. One way individuals find meaning in life is through post-traumatic growth, in which they rewrite their life narrative (Triplett et al., 2012).

The last dimension of psychological well-being, as identified by Ryff (1989), is personal growth, which closely resembles the meaning Aristotle gave to the concept of eudaimonia. Personal growth involves not only achieving the previous dimensions but also continuing to develop personal potential. An individual with a high score on this dimension sees themselves growing, is open to new experiences, sees constant improvements in themselves and their behavior. An individual with a low score stagnates, feels bored and uninterested in life, does not feel capable of developing new attitudes or behaviors, and does not see improvements in themselves over time (Ryff, 1989).

While Ryff described the personal aspect of eudaimonic well-being, Keys (1998) described the social aspect of eudaimonic well-being through what he called social well-being, an evaluation of an individual's circumstances and functioning in society. The first dimension of social well-being is social integration, which measures the extent to which people feel they have something in common with those around them, who constitute their social reality, and the degree to which they feel they belong to their community and society. Social acceptance is the public counterpart of self-acceptance. Individuals who express social acceptance trust people, consider them capable of kindness, and contributing positively to society. Social contribution reflects the degree to which individuals feel that what they do is valuable for society and contributes to the common good. Social actualization is the evaluation of the potential and trajectory toward which society is heading and reflects the belief that the institutions and systems created by humans contribute to the fulfillment of society's potential. Social coherence is the public counterpart of purpose in life. Individuals who manifest social coherence are not only interested in what is happening around them but also understand the events in their environment and do not deceive themselves into thinking they live in a perfect world (Keys, 1998).

A model that integrates elements from all the types of well-being described earlier is PERMA, developed by Martin Seligman. Its components—Positive Emotion, Engagement, Positive Relationships, Meaning, and Accomplishment—are independent but interconnected. Each of them contributes to well-being, is pursued as a goal in itself by many people, and is defined and measured independently (Seligman, 2011). Positive emotions involve the ability to experience emotions such as happiness, gratitude, optimism, and hope. According to Fredrickson (2001), positive emotions facilitate more creative and diverse thoughts and actions, contributing to the development of sustainable personal resources, such as physical, social, and intellectual resources. Joy or interest plays a crucial role in mitigating the effects of negative emotions by reducing cardiovascular reactivity caused by them, thus promoting psychological and physical recovery (Fredrickson & Levenson, 1998). Engagement refers to total involvement in activities that use personal strengths, a state called flow (Csikszentmihalyi, 1990). This state occurs when the challenges encountered match the individual's competencies. Engagement supports personal development and contributes to well-being by using internal resources to overcome obstacles (Butler & Kern, 2016). Positive relationships are the foundation for trust and cooperation, which are critical in both personal and professional life (Seligman, 2011), and they provide emotional support, reduce stress, and contribute to happiness (Reis & Gable, 2003).

Meaning in life involves belonging and contributing to something greater than oneself. The process of identifying one's purpose involves several stages: discovering values and passions, reflecting on current and desired competencies and habits, reflecting on current and future social life, reflecting on potential careers, writing about an ideal future, setting goals and the plans that support them, and publicly committing to the set goals (Schippers & Ziegler, 2019). People who find meaning in life exhibit increased resilience in the face of adversity (Kashdan & McKnight, 2009). Accomplishments refer to achieving goals and the personal satisfaction derived from success. These are not limited to professional achievements but include any significant personal achievement, from learning a new hobby to overcoming major challenges.

1.3. Research Objectives

In the literature, interpersonal relationships are an essential predictor of mental health and overall life satisfaction (Ryff, 1989; Diener, 1999). Additionally, Seligman's PERMA model (2011) emphasizes the role of positive relationships in achieving authentic well-being. Literature suggests that gender differences in friendship influence how these relationships contribute to well-being. Women

tend to place greater importance on self-disclosure and emotional support, while men focus on recreational activities and instrumental support (Fehr, 1996; Wellman & Wortley, 1989).

Through this study, we aim to conduct a systematic review of the literature regarding the relationship between friendship in emerging adults and well-being in emerging adults. The research questions we will explore are:

- Which aspects of friendship are most commonly associated with well-being?
- Are there differences between men and women in the relationship between friendship and well-being?

1.4. Contributions of Studying the Identified Research Problem

The relationship between friendship and well-being has been extensively studied in children, adolescents, and the elderly (Peziarkianidis, 2023); however, there are no dedicated studies for adults, as this stage includes many life periods where the role of romantic relationships and family as parents plays a central role. In this stage, there are variations in the number and quality of friendships.

The proposed study contributes to the field of developmental psychology by offering new perspectives for the emerging adulthood stage. Methodologically, the proposed systematic review provides an advantage by integrating conclusions from a broad spectrum of international studies, offering an intercultural view of the phenomenon. Practically, these conclusions can guide the development of interventions aimed at supporting young adults in building and maintaining quality relationships, contributing to their long-term well-being in both academic and professional contexts. Financially, a systematic review approach allows for exploration of existing literature without additional costs for primary data collection.

METHOD

This research is based on a systematic review design. To identify the relationship between friendship and wellbeing in emerging adults, we searched for scientific articles published in the last 10 years, from 2015 to 2024, using the following keywords: “friends” OR “friend” OR “friendship” OR “friendships” AND “wellbeing” OR “psychological well being” OR “happiness” OR “flourish” AND “emergent adults” OR “emergent adulthood”. The search was conducted in the following databases: PubMed, Scopus, and JSTOR.

To refine the initial 462 articles identified, a series of inclusion and exclusion criteria were applied to ensure the relevance and quality of the results analyzed. First, the selected articles were written exclusively in English to ensure accessibility and integration into the context of international literature. Second, we restricted the selection to studies published within the last 10 years, covering both the pandemic and pre-pandemic periods. Third, only studies involving participants aged between 18 and 29 years were included, as this is the specific age range for emerging adulthood. In the case of longitudinal studies, we selected articles where participants fell within this age range at least at one point of measurement. Finally, regarding the type of articles, the selection was limited to original research studies, whether quantitative, qualitative, or longitudinal, excluding systematic reviews, book chapters, or articles published in anthologies to avoid information duplication or indirect perspectives.

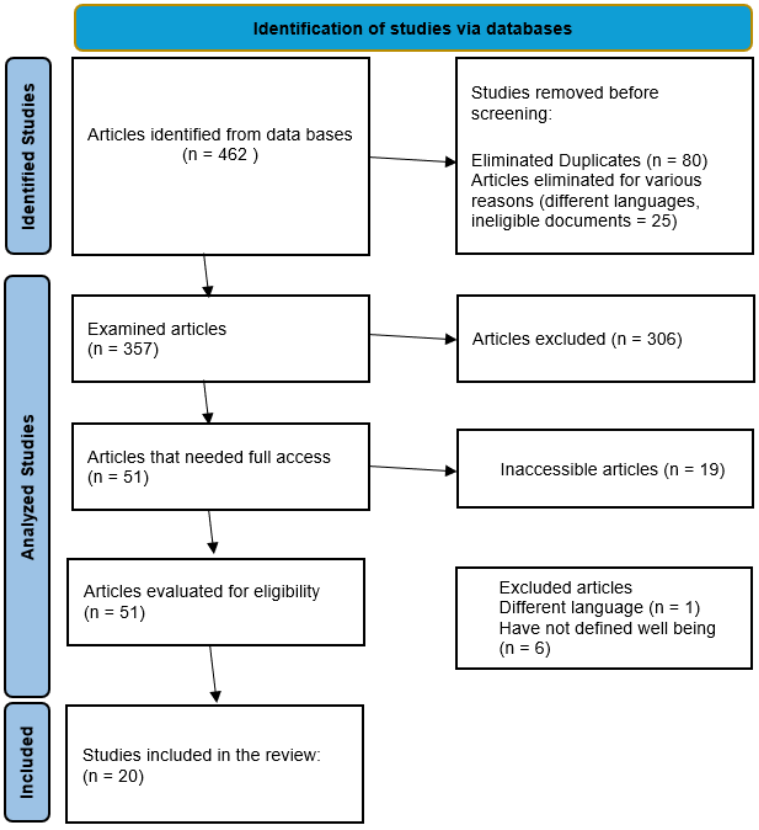

Figure 1. *PRISMA Diagram*

RESULTS

The 20 selected studies cover a variety of methodologies and international samples, providing a diversified perspective on the dynamics of friendship. These studies include quantitative, longitudinal, and experimental research, with participants from the United States (10 studies), Canada (2 studies), Australia (2 studies), Sweden (2 studies), Spain (1 study), Chile (1 study), Turkey (1 study), and Malaysia (1 study). The average age of participants ranges between 18 and 29 years, reflecting the specific age range of emerging adulthood.

The studies addressed different aspects of the friendship relationship: relationship quality, support provided, online/offline interactions, intimacy, trust, attachment, friendship maintenance, socialization frequency, and the perception of significance in interpersonal relationships. Among the scales used to measure these aspects are: Oswald et al. for friendship maintenance (Demir et al., 2019; Sanchez et al., 2018) with four elements: positivity, support, openness, interaction; the Friendship Quality Scale created by Thien et al. in 2012 (Akin & Akin, 2015), which measures four dimensions of friendship: closeness, help, acceptance, and security; McGill Friendship Questionnaire–Friend's Functions (MFQ-FF) (Yap et al., 2022); Inventory of Parent and Peer Attachment (IPPA) (Valarezo-Bravo et al., 2024); and Experiences in Close Relationships-Relationship Structures (ECR-RS) (Copley & Daniels, 2023).

The studies analyzed used the following dimensions of wellbeing: hedonic well being measured through the Satisfaction with Life Scale (SWLS) created by Diener in 1985 (Anderson & Fowers, 2020); PANAS created by Watson et al. in 1988 (Anderson & Fowers, 2020, Demir & Tyra, 2019); Subjective Happiness Scale created by Lyubomirsky & Lepper in 1999 (Akin & Akin, 2015; Yap et al., 2022); eudaimonic well being measured through the Psychological Wellbeing Scale created by Ryff in 1989 (Anderson & Fowers, 2020) or the Flourishing Scale created by Diener et al. in 2010 (De la Fuente et al., 2019). Wellbeing was also measured through scales for self-esteem, loneliness, or depression (Camirand & Poulin, 2022).

In Table 1, we have synthesized the main characteristics of the studies analyzed, including the sample, the aspects of friendship evaluated, and their relationships with various dimensions of wellbeing. This table serves as a starting point for further discussions, focusing on identifying the factors contributing to the relationship between friendship and wellbeing in emerging adults.

Table 1. *Conclusions of articles regarding the associations between friendship and well-being*

No	Authors, Year	Study Type	Sample (number of participants, gender, age, countries)	Friendship Details	Relationship with friendship details
1	Akin, A., & Akin U. (2015)	Quantitative	271 students from Turkey, 54% female, 46% male, aged 18-26	Quality of Friendship Relationship (closeness, support, acceptance, security)	The quality of friendship correlates positively with subjective vitality ($r = .38$) and subjective happiness ($r = .29$). Subjective vitality moderately correlates with subjective happiness ($r = .39$).
2	Anderson, A. R., & Fowers, B. J. (2020)	Quantitative	375 student participants in the USA: 265 women, 109 men, 1 non-specified gender	Virtuous Friendship	Virtuous friendship correlates with eudaimonic well-being ($r = .23$, $p = .02$, 95%).
3	Camirand, É., & Poulin, F. (2022)	Longitudinal	190 participants from Canada: T1 – mean age 12.38 (58% female), T2 – mean age 22 (64.4% female)	Intimacy and Conflict with Best Friend	Intimacy with the best friend is positively associated with self-esteem ($\beta = 0.15$, $p < .05$), while conflict is linked to depressive symptoms ($\beta = 0.14$, $p < .05$). Intimacy and conflict in romantic relationships moderate the impact of intimacy and conflict in friendships on well-being, suggesting cumulative and compensatory effects.
4	Copley & Daniels, 2023	Quantitative	202 students in the USA: 70.8% female, 22.5% male, 3.3% transgender, aged 19-23	Attachment to Friends (secure, anxious, avoidant)	Insecure attachment to friends negatively impacts new possibilities ($\beta = -.371$, $p < .001$). Romantic relationships and close friends explain 16.7% of the variance in new possibilities and 13.8% of the variance in personal growth. Secure attachment to friends correlates with a stronger sense of new possibilities and personal power.

No	Authors, Year	Study Type	Sample (number of participants, gender, age, countries)	Friendship Details	Relationship with friendship details
5	De la Fuente, R., Sánchez-Queija, I., Parra, A., y Lizaso, I. (2019).	Quantitative	1502 students in Spain: 65.2% female, 34.8% male, aged 18-29 (mean age 20.32)	Social Support from Friends	Positive and significant correlation with flourishing, stronger for men ($r = 0.38$, $p < .01$) compared to women ($r = 0.27$, $p < .01$).
6	Demir, M., Tyra, A., & Özen-Çıplak, A. (2019)	Quantitative	685 university students in the USA: 67% female, 33% male, mean age 18.73	Friendship Maintenance (positivity, support, openness, interaction)	Friendship maintenance mediates perceived response to capitalization attempts and happiness levels.
7	Juvonen, J., Lessard, L. M., Kline, N. G., & Graham, S. (2022)	Longitudinal	1557 students in the USA, aged 20-24: 62% female, 31% male, 7% other gender identities	Friendship Quality (support provided)	Frequency and satisfaction with electronic communication. Loneliness decreased in T2 compared to T1 ($t(1536) = 3.33$, $p = 0.001$). Higher satisfaction with electronic communication is associated with reduced social anxiety ($\beta = -0.07$, $p < .05$) and depression ($\beta = -0.09$, $p < .01$).
8	Langheit, S., & Poulin, F. (2024)	Longitudinal	346 participants from Canada: 60.5% female	Intimacy, Trust Alliance, and Conflict with Best Friend	Intimacy and trust alliance are associated with higher self-esteem ($\beta = .15$, $p = .001$) and lower loneliness ($\beta = -.21$, $p < .001$).
9	Li, N. P., & Kanazawa, S. (2016).	Longitudinal	15197 individuals aged 18-28 in the USA	Frequency of Socializing with Friends	Significant positive association with life satisfaction ($b = .031$, $p < .001$).
10	Lund, T. J., Liang, B., Lincoln, B., White, A. E., Mousseau, A. M. D., Mejia Gomez, L. A., & Akins, E. (2022)	Quantitative	195 students in the USA, aged 18-21: 75.4% female	Quality of Relationship with Best Friend (engagement, empathy, authenticity, empowerment)	Higher friendship quality positively associated with commitment to life goals ($\beta = 0.32$, $p < .001$). The effect is stronger for first-generation students ($\beta = 0.16$, $p < .05$).

No	Authors, Year	Study Type	Sample (number of participants, gender, age, countries)	Friendship Details	Relationship with friendship details
11	Miething, A., Almquist, Y. B., Östberg, V., Rostila, M., Edling, C., & Rydgren, J. (2016).	Longitudinal	772 participants from Sweden, aged 19 and 23 at two data collection points (T1 and T2)	Quality of Friendship within Close Friend Networks	Weak to moderate correlation between friendship quality and psychological well-being at T1 (for men $r = .29$, $p < .01$; for women $r = .28$, $p < .01$); weaker at T2 (for men $r = .15$, $p < .01$; for women $r = .17$, $p < .01$).
12	Miething, A., Almquist, Y. B., Edling, C., Rydgren, J., & Rostila, M. (2017).	Longitudinal	782 participants from Sweden, aged 19 and 23 at two data collection points (T1 and T2)	Trust	Modest bidirectional effect between trust and psycho-logical well-being, with very good fit for men (RMSEA = 0.035, CFI = 0.974, TLI = 0.965) and good fit for women (RMSEA = 0.046, CFI = 0.957, TLI = 0.942).
13	Morelli, S. A., Lee, I. A., Arnn, M. E., & Zaki, J. (2015)	Longitudinal	98 students in the USA (49 same-gender pairs), mean age 19.41	Emotional and Instrumental Support	Emotional support is associated with reduced loneliness ($\beta = -0.29$, $p < .01$) and perceived stress ($\beta = -0.17$, $p < .01$), as well as increased happiness ($\beta = 0.25$, $p < .01$). Instrumental support marginally associated with reduced loneliness ($\beta = -0.14$, $p < .01$).
14	Rubin, M., Evans, O., & Wilkinson, R. B. (2016)	Longitudinal	314 first-year students in Australia, mean age 23.4, 64.33% female	Social Contact (number of friends communicated with online/ offline in the last week)	More frequent social contact is associated with reduced depression ($\beta = -0.12$, $p = .014$) and increased life satisfaction ($\beta = 0.13$, $p = .025$). Social contact mediates the relationship between subjective social status and well-being.
15	Sanchez, M., Haynes, A., Parada, J. C., & Demir, M. (2018).	Quantitative	368 students in the USA, aged 18-25, 250 female, 118 male	Friendship Maintenance (positivity, support, openness, interaction)	Friendship maintenance behaviors mediated the relationship between compassion for others and happiness ($\beta = 0.37$ for men, $\beta = 0.30$ for women; $p < .001$).

No	Authors, Year	Study Type	Sample (number of participants, gender, age, countries)	Friendship Details	Relationship with friendship details
16	Scott, R. A., Stuart, J., Barber, B. L., O'Donnell, K. J., & O'Donnell, A. W. (2022)	Quantitative	329 participants in Australia, mean age 20.05, 68.1% female, 28.6% male	Interaction Environment with Friends (online/ offline)	Mixed interactions correlate positively with friendship satisfaction (β = 0.18, p < .05), while exclusively online interactions negatively impact friendship satisfaction (β = -0.23, p < .001). Reduced friendship satisfaction was associated with increased loneliness (β = 0.04, p = .008) and decreased social connected-ness (β = -0.09, p < .001).
17	Secor, S. P., Limke-McLean, A., & Wright, R. W. (2017)	Experimental	64 students in the USA, aged 18-37, mean age 20.55, 42 female, 12 male	Social Support from Friends	Perceived support from friends was a significant predictor of positive affect (β = 0.66, p < .01).
18	Valarezo-Bravo, O., Guzmán-González, M., Włodarczyk, A., Ubillos-Landa, S., & Casu, G. (2024)	Quantitative	199 participants in Chile, aged 18-29, mean age 22.42, 67.8% female	Attachment to Friends (secure, communi-cation, alienation)	Secure attachment to friends correlates with eudaimonic (b = .08, p = .04) and social well-being (b = .09, p = .04).
19	Yang, C.-C., & Christofferson, K. (2020)	Quantitative and qualitative	222 students in the USA, aged 18-24, mean age 19.87, 82% female	Perception of digital multitasking	Negative perception of friends' digital multitasking was associated with lower friendship quality (β = -0.32, p < .001) and increased loneliness (β = 0.39, p < .001).
20	Yap, Prihadi, Hong & Baharuddin (2022)	Quantitative	119 participants in Malaysia, 36 male, 83 female, aged 18-24, mean age 20.89	Perception of significance in interpersonal relationships	Results were not statistically significant for friendship quality and subjective well-being (p = .32). An increase of one unit in perceived significance in interpersonal relationships was associated with a 0.792 unit increase in subjective well-being.

In the studies analyzed, the most frequently observed aspect of friendship is its quality. Although defined differently in each study, support is a common element. Akin & Akin (2015) evaluated it using the Friendship Quality Scale developed by Thien et al. in 2012, which includes four elements: closeness, support, acceptance, and safety. Juvonen et al. (2022) measured friendship quality through three items assessing emotional support. Lund et al. (2022) assessed friendship quality using the Relational Health Indices, which captures relationship characteristics that help individuals develop personally: mutual engagement, empathy, authenticity, and empowerment. Miething et al. (2016) measured overall friendship quality with a single question: "How good do you think your friendship is?" with response options on a 5-point scale ranging from "not good at all" to "very good." Yang (2020) measured friendship quality using the Relationship Assessment Scale developed by Hendrick in 1988, adapted for friendship relationships. The 7 items evaluate relationship satisfaction, the fulfillment of needs, and existing issues within the relationship. Yap et al. (2022) measured friendship quality using the McGill Friendship Questionnaire – Friendship Functions, which contains 30 items assessing various aspects of friendship: emotional and instrumental support, intimacy, trust, stimulating company, appreciation, and conflict.

These studies have highlighted associations between friendship quality and various aspects of well-being. Some associations are stronger, such as in the studies by Akin & Akin (2015), who demonstrated that friendship quality correlates positively with subjective vitality ($r = 0.38$) and subjective happiness ($r = 0.29$), and Lund et al. (2022), who found a significant association between involvement and empathy in friendships and commitment to life goals ($\beta = 0.32$), an important aspect of eudaimonic well-being. On the other hand, Miething et al. (2016) observed that in appropriate social networks, friendship quality has a weaker, but positive impact on psychological well-being (r ranging from 0.15 to 0.29), while in the study by Yap et al., the results were not statistically significant for friendship quality and subjective well-being ($p = 0.32$), with well-being being associated with the perceived meaning in interpersonal relationships.

In addition to authors who considered the support received as part of friendship quality, there are three articles specifically examining the relationship between support and well-being. De la Fuente et al. (2019) aimed to investigate which characteristics of emerging adults are most associated with flourishing. One of these characteristics is social support, measured in this study using the Multidimensional Scale of Perceived Social Support created by Zimet et al. in 1988 (De la Fuente et al., 2019). The scale includes three subscales assessing social support received from friends, family, and romantic partners. The support offered by friends has a different impact for women and men. For women, there

is a positive and weak relationship between friends' support and flourishing ($r = 0.27$, $p \leq .01$), explaining 16% of the variation in flourishing, making it the second most important factor, while for men, there is a positive and weak-moderate relationship between friends' support and flourishing ($r = 0.38$, $p \leq .01$), explaining 19% of the variation in flourishing, making it the fourth most important factor.

Secor et al. (2017) highlighted the significant relationship between perceived support from friends and psychological well-being during difficult times. In the experiment presented in the article, participants completed a false aptitude test consisting of 25 questions (e.g., synonyms, number sequences). After the test, participants filled out the PSS-Fa and PSS-Fr questionnaires to measure perceived support from family and friends. After completing the questionnaires, they were randomly assigned to three feedback groups: positive feedback (told they ranked in the top 10% nationally), negative feedback (told they ranked in the bottom 10%), and neutral feedback (told their performance was average). After feedback, participants completed the PANAS questionnaire. In the group that received negative feedback, perceived support from friends had a significant effect on positive affect ($\beta = 0.66$, $p < 0.01$), explaining 35% of its variation. For the group that received positive feedback, friends' support was not statistically significant in predicting either positive or negative affect ($\beta = -0.11$, $p < 0.01$). Similarly, for the group that received neutral feedback, friends' support had no significant predictive value ($\beta = -0.21$, $p < 0.01$ for positive affect and $\beta = -0.20$, $p < 0.01$ for negative affect).

Morelli et al. (2015) analyzed the impact of the type of support received from friends on well-being. Emotional support, which consists of empathy and emotional responsiveness, reduced loneliness ($\beta = -0.29$, $p < 0.01$) and perceived stress ($\beta = -0.17$, $p < 0.01$). In general, it reduced loneliness ($\beta = -0.46$, $p < 0.05$) and stress ($\beta = -0.27$, $p < 0.05$). Instrumental support was measured by the number of emotional disclosures heard by the person providing support and tangible help offered. Emotional disclosures were included in instrumental support because simply hearing disclosures does not necessarily imply emotional support. Behaviors for tangible help were extracted from the Self Report Altruism Scale and included items such as: buying a gift, a meal, caring for someone during illness, helping with problem-solving, giving advice, lending money or valuable items, helping with homework or household chores. On a daily level, instrumental support reduced loneliness ($\beta = -0.14$) and contributed marginally to happiness ($\beta = +0.08$). In the long term, it was associated with increased stress ($\beta = +0.23$). Analyzing the interaction between emotional and instrumental support, the authors found that instrumental support had a significantly larger impact on well-being when combined with

high emotional support, reducing loneliness (β = -0.83, p = 0.001), perceived stress (β = -0.69, p = 0.011), and anxiety (β = -0.37, p = 0.017), and increasing happiness (β = +0.53, p = 0.003), whereas in the absence of emotional support, the effects of instrumental support were not significant. Emotional support moderated the effects of instrumental support on happiness (β = 0.38, p = 0.03), loneliness (β = -0.49, p = 0.06), and stress (β = -0.43, p = 0.01).

The selected articles also include two studies that analyze electronic communication between friends and its relationship with well-being, which is especially relevant in the post-COVID-19 era, which has significantly changed the way we work, learn, and relate to each other. Scott et al. (2022) examined how well-being was affected by the transition from face-to-face communication to online communication with friends during the COVID-19 lockdown in Australia, with data collected from April 15 to May 24, 2020. The study measured friendship satisfaction through a single item created specifically for this study: "How has the COVID-19 pandemic changed how satisfied you are with your friendships?" with responses on a scale from 1 (much less satisfied) to 5 (much more satisfied). Well-being in the study was measured using two indicators: loneliness, assessed with the UCLA Loneliness Scale developed by Hays & DiMatteo in 1987, and social connection, measured using the Social Connectedness Scale-Revised developed by R. M. Lee et al. in 2001 (Scott et al., 2022). Young people who interacted predominantly offline before the pandemic reported a significant decrease in friendship satisfaction after the transition to online interactions (β = -0.23, p < .001). The decrease in friendship satisfaction was associated with higher levels of loneliness (β = -0.19, p < .001). The change in the interaction context from offline to online, imposed by the COVID-19 pandemic restrictions, indirectly influenced social well-being by reducing satisfaction in friendships; this indirect effect was significant for loneliness (β = 0.04, p = .008, CI95% = [0.02, 0.08]) and social connection (β = -0.09, p < .001, CI95% = [-0.13, -0.04]).

Juvonen et al. (2022) investigated the role of the quality and quantity of friendship relationships, along with satisfaction with electronic communication, in relation to the social and emotional well-being of young adults in the spring of 2021. Data were collected from 1,557 participants aged 20 to 24 years using a combination of longitudinal analyses and questionnaires regarding friendships and well-being. The friendship questionnaires included items on changes in the number of friends, changes in the quality of friendships measured by support received, changes in the quantity of interactions with friends, and the frequency of electronic communication. Results showed that, despite restrictions on face-to-face interactions, participants were able to maintain and even improve the quality of their friendships, with the average score increasing slightly (t(1353) = 2.50, p = 0.013). Additionally, there was a significant increase in the number of

friends listed during the pandemic ($t(1556) = 4.47$, $p < 0.001$). However, 57% of participants reported keeping in touch with fewer friends compared to the pre-pandemic period, highlighting selectivity in maintaining contact. Satisfaction with electronic communication was found to be the strongest predictor of emotional well-being, being associated with lower levels of social anxiety ($\beta = -0.07$, $p < 0.05$), depressive symptoms ($\beta = -0.09$, $p < 0.01$), and generalized anxiety ($\beta = -0.14$, $p < 0.001$). Moreover, more frequent use of electronic media such as text messaging and video calls was correlated with a reduction in feelings of loneliness ($\beta = -0.06$, $p < 0.05$).

Lee et al. (2023) explored the relationship between digital multitasking, friendship, and well-being, using data collected from January to March 2023 from a sample of 750 young people aged 18 to 29 years. Participants completed an online questionnaire that measured digital multitasking behaviors, friendship satisfaction, and well-being using indicators similar to those in the existing literature. Friendship satisfaction was assessed with a single item: "How satisfied are you with your friendships?" with responses on a Likert scale from 1 (not satisfied at all) to 5 (very satisfied). Well-being was measured using two scales: the Loneliness Scale developed by Hays & DiMatteo in 1987 and the Social Connectedness Scale-Revised developed by R. M. Lee et al. in 2001 (Lee et al., 2023). High levels of digital multitasking were negatively associated with friendship satisfaction ($\beta = -0.21$, $p < .001$). Regarding well-being, digital multitasking was associated with higher levels of loneliness ($\beta = 0.18$, $p = .002$) and lower levels of social connection ($\beta = -0.15$, $p = .005$). The effects of multitasking on social connection were partially explained by a decrease in friendship satisfaction ($\beta = -0.07$, $p = .011$, $CI95\% = [-0.12, -0.02]$). This research highlights the potential negative impact of digital multitasking on friendship relationships and, consequently, on well-being.

Since the second research question in this systematic review refers to gender differences in the relationship between friendship and well-being, 7 of the selected articles also address this aspect. Demir & Tyra (2019) explored how friendship maintenance (FM) and constructive responses to sharing positive events (PRCA) contribute to happiness for each gender. For both genders, positive responses received in friendships directly influence well-being. In both studies included, the correlation between PRCA and happiness was consistent for both men and women. In Study 1, PRCA had a correlation of $r = 0.31$ with happiness for men and $r = 0.35$ for women, while in Study 2, these values were $r = 0.31$ and $r = 0.34$. Regarding friendship maintenance, it was associated with an increase in happiness for both genders ($r = 0.37$ for women and $r = 0.35$ for men in Study 1). Women reported significantly higher levels of PRCA and FM compared to men.

Miething et al. (2016) examined gender-specific associations between self-reported friendship network quality and young adults' psychological well-being during the transition from late adolescence to emerging adulthood. At age 19, the correlation between friendship network quality and well-being was 0.29 for male participants and 0.28 for female participants ($p < 0.001$), and at age 23, these correlations decreased to 0.15 for males and 0.17 for females, but remained significant ($p < 0.05$). For female participants, there was a weak inverse association between well-being at age 19 and friendship network quality at age 23, with a coefficient of 0.10 ($p < 0.10$). These data support the conclusion that, although there is a positive correlation between friendship network quality and well-being for both genders, the relationship is more influenced by well-being in female participants.

Miething et al. (2017) examined gender-specific associations between trust in friends and psychological well-being during the transition from late adolescence to emerging adulthood. At age 19, the correlation between trust in friends and well-being was 0.20 for both male and female participants ($p < 0.001$). At age 23, these correlations decreased to 0.12 for male participants ($p < 0.05$) and 0.05 for female participants, suggesting a decrease in the interdependence between these variables over time. For female participants, the analysis revealed a significant inverse relationship between well-being at age 19 and trust in friends at age 23, with a coefficient of 0.14 ($p < 0.05$). This inverse association suggests that lower well-being in adolescence may negatively influence the quality of friendship networks in early adulthood, with women being more vulnerable to these effects compared to men.

Camirand & Poulin (2022) investigated the links between well-being, intimacy, and conflict in the relationship with a best friend and romantic partner. Intimacy in the relationship with a best friend was positively associated with self-esteem, regardless of gender. For participants with medium or low levels of intimacy in their romantic relationship, high intimacy in the friendship relationship was associated with higher self-esteem ($\beta = 0.15$, $p < 0.05$ for women and $\beta = 0.30$, $p < 0.01$ for men). Conflictual relationships were correlated with increased depressive symptoms, a trend present for both genders, especially when conflicts occurred in both types of relationships ($\beta = 0.14$, $p < 0.05$ for women and $\beta = 0.28$, $p < 0.01$ for men). The duration of relationships influenced psychological well-being more for women: long-term friendships were associated with higher self-esteem ($\beta = 0.18$, $p < 0.01$).

Sanchez et al. (2018) examined friendship maintenance behaviors (FM) as a mediator for the relationship between compassion for others (CFO) and happiness through two studies. Study 1 had a sample of 273 participants with an average age of 19.13 years, consisting of 83 men and 190 women, and

measured happiness using the PANAS scale, while Study 2 had a sample of 358 participants with an average age of 18.90 years, consisting of 118 men and 250 women, and happiness was measured using the SHS scale. Women's scores for CFO were significantly higher (M = 4.02) than those of men (M = 3.77), and for FM, women had an average score of 9.79 compared to 9.23 for men. However, the relationship between CFO, FM, and happiness was consistent for both genders. FM positively mediated the relationship between CFO and happiness for both men and women, with standardized regression coefficients for men of B=0.37, CI95%=[0.17, 0.64] in Study 1 and B=0.25, CI95%=[0.07, 0.45] in Study 2. For women, the coefficients were B=0.30, CI95%= [0.12, 0.52] in Study 1 and B=0.33, CI95%=[0.21, 0.52] in Study 2.

DISCUSSIONS

According to the results obtained from the analysis of the specialized literature, the quality of friendships and the support received are essential predictors of well-being in emerging adults. The studies analyzed indicate a positive association between dimensions of friendship quality (e.g., intimacy, emotional support, trust) and indicators of well-being, whether they are measured in hedonic terms (e.g., subjective happiness) or eudaimonic terms (e.g., life purpose). For example, emotional support provided by friends has been shown to have a positive correlation with reduced loneliness and perceived stress (Morelli et al., 2015), while intimacy in friendships has been linked to higher self-esteem and lower feelings of loneliness (Langheit & Poulin, 2024).

The quality of friendship, including dimensions such as safety, support, and perceived satisfaction, is the most commonly identified predictor of well-being in the analyzed studies. This quality is influenced by factors such as value congruence, frequency of interactions, and conflict management, emphasizing the active role individuals play in maintaining satisfying friendships. Friendship quality thus acts as a catalyst for an individual's internal and external resources, promoting well-being both personally and socially.

The second most frequent predictor of well-being is support. The selected studies analyzed both emotional and instrumental support received from friends. Morelli et al. (2015) demonstrated that emotional support, defined by empathy and responsiveness, significantly reduces loneliness (β = -0.29) and perceived stress (β = -0.17). These benefits are amplified when emotional support is combined with other forms of support, such as instrumental support, indicating a positive interaction between the types of support provided in

friendships. The strong relationship between emotional support and well-being is justified by its role in emotional regulation, an essential process for mental health, particularly during the emerging adulthood period. For women, emotional support from friends is correlated with important aspects of well-being, such as subjective vitality and happiness. De la Fuente et al. (2019) found that support provided by friends explains about 16% of the variation in eudaimonic well-being (flourishing) in women, while this percentage is higher for men, suggesting that the impact of support from friends may differ by gender. Men, on the other hand, appear to benefit more from shared activities with friends and instrumental support. This action-oriented and practical focus aligns with literature suggesting that men tend to perceive friendship as a space for camaraderie and practical cooperation rather than emotional self-disclosure (Fehr, 1996). However, this perspective does not diminish the importance of emotional support for men; it highlights that this type of support is more effective when combined with instrumental activities (Morelli et al., 2015).

Theoretically, the results confirm the relevance of existing models, such as Diener's subjective well-being theory (1984) and Seligman's PERMA model (2011), which center around positive relationships. Friendship, alongside family and romantic relationships, is one of these relationships. Additionally, the results extend the perspective on the role of friendship during emerging adulthood, a stage marked by self-exploration and uncertainty. Practically, the findings can guide the development of interventions aimed at improving the well-being of young adults, especially in university settings or within organizations where emerging adults begin their careers.

The proposed research has limitations that must be considered. As a systematic review, it depends on the quality and diversity of the studies included. Although the studies selected include participants from 8 countries, they predominantly represent the perspectives of Western cultures where the quality of friendship correlates with well-being. Only the study conducted on a sample from Malaysia (Yap et al., 2022) did not find statistically significant results for friendship quality and subjective well-being ($p = .32$). Another limitation of the research is that only the study by Secor et al. (2017) is based on an experiment, while the others rely on subjective reports from participants, which suggests a higher level of subjectivity in the results.

Building on this systematic review, several future research directions emerge: investigating the influence of the digital environment on friendship and well-being, considering the impact of the COVID-19 pandemic on social interactions. Additionally, the influence of culture on the relationship between friendship and well-being can be explored, or specific interventions aimed at improving friendship quality, such as mentoring programs, counseling, or support groups.

CONCLUSIONS

This systematic review has demonstrated the essential role that friendship plays in the well-being of emerging adults. The main aspects of friendship associated with well-being are the quality of the friendship and the emotional and instrumental support provided within these relationships. In addition to these, other aspects correlating with well-being include friendship maintenance behaviors, intimacy, frequency of social contact, and the perceived significance of interpersonal relationships. Furthermore, the results suggest that high-quality friendships can act as an emotional buffer against stress, especially during transitional moments such as the start of university. Friendships among emerging adults also incorporate aspects of online communication, as they have adapted to the demands imposed by the pandemic and the shift toward predominantly online interactions. Satisfaction with friendship and well-being depend on perceptions of digital multitasking and the online communication methods used.

For both male and female participants, aspects of friendship positively correlate with well-being, whether hedonic, eudaimonic, or social. However, women tend to value emotional and intimacy dimensions more, while men prioritize shared activities and instrumental support.

The research has limitations regarding the transferability of the results. Most of the studies included come from Western countries, which may influence the generalization of the conclusions to other socio-cultural contexts. Additionally, the majority of participants are students, which reflects only one of the transitions emerging adults experience. The analysis method, based on a systematic review, while integrative, may not capture all the nuances of the relationship between friendship and well-being.

Regarding future research directions, we suggest longitudinal and cross-cultural studies investigating the dynamics of friendship and well-being throughout the entire emerging adulthood period, rather than focusing solely on the university years. From a practical perspective, the results of this research can guide programs for integration, mentorship, or social support in educational or professional environments for emerging adults. Additionally, practical guides for these individuals regarding the creation and maintenance of friendships during the transitional and uncertain periods characteristic of emerging adulthood could be developed, alongside digital applications that support the quality of friendships or interventions for romantic partners and parents of emerging adults regarding the importance of friendships and balance in social relationships during this life stage.

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Perfectionism's Role in Shaping Adolescents' Perception of Support from Friends

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ABSTRACT. Perfectionism is theorized to be affected by one's relationships, but also negatively impacting relationships with others. The present study explores the longitudinal associations between perfectionism and perceived support from friends, on a sample of two hundred and sixty-one adolescents (m_{age} = 17.6 years), using a cross-lagged panel design with two waves. Results showed that perfectionistic concerns contribute to relative decreases in adolescents' perceived support from friends. The present results support the model of perfectionism social disconnection, indicating that perfectionistic concerns may interfere with adolescents' perceptions on friendships.

Keywords: perfectionistic strivings, perfectionistic concerns, support from friends, adolescents, longitudinal

ABSTRAKT. Perfektionismus wird theoretisch von zwischenmenschlichen Beziehungen beeinflusst, wirkt sich aber auch negativ auf Beziehungen zu anderen aus. Die vorliegende Studie untersucht die longitudinalen Zusammenhänge zwischen Perfektionismus und der wahrgenommenen Unterstützung durch Freunde anhand einer Stichprobe von 261 Jugendlichen (Mittelw = 17,6 Jahre) unter Verwendung eines Cross-Lagged-Panel-Designs mit zwei Messzeitpunkten. Die Ergebnisse zeigten, dass perfektionistische Bedenken zu einem relativen Rückgang der wahrgenommenen Unterstützung von Freunde beitragen. Dieses Ergebnis unterstützt das theoretische Modell der sozialen Entfremdung durch Perfektionismus und deutet darauf hin, dass perfektionistische Bedenken die Freundschaften von Jugendlichen beeinträchtigen können.

Schlüsselwörter: Perfektionistische Bestrebungen, Perfektionistische Bedenken, Unterstützung durch Freunde, Jugendliche, Longitudinal.

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1. PERFECTIONISM'S ROLE IN SHAPING ADOLESCENTS' PERCEPTION OF SUPPORT FROM FRIENDS

Perfectionism is commonly described as a multifaceted personality attribute signified by the pursuit of unrealistically high standards and severe self-criticism, fueled by an internal drive to achieve flawlessness (Frost et al., 1990; Hewitt et al., 2017).

Previous research has established it as a significant contributing factor for mental health struggles and relational difficulties (Flett et al., 2022). It consistently related to depression and suicidality (Smith et al., 2018), eating disorders (Bills et al., 2023), poorer outcomes in therapy (Mitchell et al., 2013), as well as social disconnection and social isolation (Chen et al., 2024; Magson et al., 2019). Moreover, perfectionism may be on an alarming rise for today's youth (Curran & Hill, 2019). Given that research indicates adolescent perfectionism peaks around the age of 15 (Leone & Wade, 2018), studying perfectionism during adolescence can provide valuable insights into the challenges and protective influences in perfectionism development, as well as the impact on adolescents' relational dynamics.

The perfectionism social disconnection model (PSDM; Hewitt et al., 2017) argues the importance of a supportive relational context impacting an individual's perfectionism over time, as well as how perfectionistic tendencies inside relationships can contribute to social disconnection. The PSDM considers perfectionism as something developed within relationships that further affects the quality of relationships. model draws attention to the importance of studying the reciprocal dynamics between perfectionism and adolescent relationships to understand better how relational context shapes perfectionism and how perfectionism shapes relational context.

While most research investigating perfectionism development focuses on family relationships (Damian et al., 2013; Ko et al., 2019), there are still many unknowns regarding the interplay of perfectionism and friendships in adolescence. Furthermore, it is commonly known that friendships become a salient part of adolescents' lives. Thus, the present research investigates the longitudinal interplay between perfectionism and friends' social support, attempting to test the PSDM in the context of adolescent friendships.

1.1. Perfectionism conceptualization

Many descriptions of perfectionism exist in the literature spanning over 30 decades. However, two influential multidimensional perfectionism models are most used in children and adolescent research.

Firstly, Frost et al. (1990) model of perfectionism is defined through six facets: personal standards (i.e., the adoption of unrealistically high standards), organization (i.e., preoccupation with organization and order), doubts about actions (i.e., hesitation or lack of confidence in what one has done or believes), concern over mistakes (i.e., preoccupation with avoiding mistakes), parental expectations (i.e., perceptions that parents impose high standards and expect one to attain those standards), parental criticism (i.e., perceptions that parents harshly evaluate and criticize oneself and one's performance). However, parental expectations and criticism are now established antecedents in perfectionism development (Damian et al., 2013; Curran & Hill, 2022), while organization is considered to be a correlate rather than part of perfectionism (Stober, 1998). Thus, most research is presently using personal standards, doubts about the actions, and concerns over mistakes scales of this model (e.g., Domocus & Damian, 2018).

Secondly, Hewitt and Flett's (1991) define perfectionism as comprised of both intrapersonal and interpersonal aspects: self-oriented perfectionism (i.e., requiring perfection from the self and harsh evaluations of the self), other-oriented perfectionism (i.e., requiring perfection from others and harsh evaluations of others), and socially prescribed perfectionism (i.e., perceptions or beliefs of being required to be perfect by others). Additionally, this model includes an assessment specifically designed to measure self-oriented and socially prescribed perfectionism in children and adolescents (Child and Adolescent Perfectionism Scale; Flett et al., 2016), distinguishing it from other assessments developed for adults.

According to previous theoretical considerations and factorial analyses on the structure of perfectionism, these distinct models are integrated two superordinate dimensions of perfectionism, which unite the multiple facets into perfectionistic strivings (i.e. personal standards and self-oriented perfectionism) and perfectionistic concerns (i.e. concerns over mistakes, and doubts about actions, and socially prescribed perfectionism) (for review Stoeber, 2018). Factorial analyses also suggest that children's perfectionism profile is better represented by combining the ratings from multiple models (Sironic & Reeve, 2015). Additionally, evidence suggests that perfectionism in children and adolescents is not adequately captured using just one model (O'Connor et al., 2009; Rice et al., 2007; 2011; Flett et al., 2016).). Overall, the bi-dimensional model is more parsimonious than others, and integrating existing models in research might better capture perfectionism in adolescents.

1.2. The perfectionism social-disconnection model

The PSDM (Hewitt et al., 2017) represents a relational conceptualization of perfectionism firstly addressing the development of perfectionism, and then, its consequences regarding relationships.

The first half of the PSDM discusses the role of relationships in perfectionism development. It suggests that perfectionistic beliefs and behaviors can be developed in an effort to remain connected and avoid rejection and loss of approval within relationships, especially with the caregiver (Hewitt et al., 2017). In contrast, exposure to affirming and supportive relationships can help individuals build a sense of belonging, self-worth, and acceptance, irrespective of their flaws or shortcomings. Most theories and research focus on the relational context within the family (Smith et al., 2022). However, extending this model to relationships outside the nuclear family, supportive friendships that build a sense of security and acceptance may prove to be a protective factor against perfectionism development.

There is little evidence of the role of peer relationships in perfectionism development. So far, research has only found a negative correlation between peer acceptance and perfectionism in adolescent athletes (Ommundsen, Roberts, Lemyre, & Miller, 2005). Also, a study investigating associations between perfectionism and resistance to peer influences found preliminary evidence of interpersonal perfectionism processes being linked to less resistance to peer influence and more proneness to internalizing ideals from peers (e.g., thinness ideals for girls) (Nanu & Scheau, 2013). Adding to this, a social network analysis research found a tendency of homophily for perfectionism in peer friendships, suggesting that perfectionistic individuals tend to surround themselves with like-minded peers (Forney et al., 2019). Moreover, research conducted with Croatian university students found that lower peer relationship quality was linked to heightened self-doubt and fear of errors, while stronger college relationships were associated with elevated perfectionistic standards and a greater emphasis on organization. However, cross-sectional research cannot inform us of the direction of influence of peer relationships and friendships that may contribute to adolescents' perfectionism. Longitudinal research is necessary to further clarify this connection and investigate whether friendships may play a role in perfectionism development in adolescents.

The second half of the PSDM proposes a reciprocal process inside relationships, where perfectionism subsequently shapes relationships (Hewitt et al., 2017). Thus, the model also describes the social disconnection consequences of perfectionism and its contribution to disconnection within relationships. More specifically, PSDM argues that perfectionism can contribute to social connection

failure and interpersonal problems, through interpersonal oversensitivity and hostility that result in feelings of social disconnection (Hewitt et al., 2017; Roxborough et al., 2012). Perfectionistic tendencies previously developed may subsequently guide perceptions, as well as specific patterns of behaviors within relationships, leading to a cycle of increasing perfectionism and disconnection (Hewitt et al., 2017). Thus, adolescent perfectionism may contribute to biased perceptions of lack of acceptance and support, and even bias further interactions contributing to a lack of trust, hindering communication, and exacerbating alienation. Extending this to friendships, adolescent perfectionism may bias perceptions and interactions with friends that result in less subjective or objective support from friends.

Empirical evidence found some preliminary support for this component of the PSDM. More specifically, cross-sectional research found an association between adolescents' need to avoid imperfection and bullying, as well as social hopelessness in relation to peers (Roxborough et al., 2012). Also, Barnett and Johnson (2016) found perfectionistic concerns to be linked to aggressive communication and lower social support in university students. Furthermore, a mixed design study on autobiographical narratives of first-year students found socially prescribed perfectionism to be linked to low friendship intimacy (Mackinnon et al., 2014). Also, another study found that young adults with perfectionistic concerns experiencing need frustration and less satisfaction within their friendships interact with their friends in a more psychologically controlling way (van der Kaap-Deeder et al., 2017).

In sum, the PSDM suggests that perfectionism can hinder relationships subjectively due to hypersensitivity to rejection and disconnection or objectively due to experiences of disconnection associated with the hostile behavior of perfectionists (Roxborough et al., 2012). Empirical research comes in support of this model, finding associations with aggressive communication, increased conflict (Barnett & Johnson, 2016; Kim et al., 2024), as well as subjective perceptions of lower general social support, lower friendship intimacy, lack of friendship quality (Barnett & Johnson, 2016; Hewitt et al., 2020; Mackinnon et al., 2014) in adults and clinical samples. Also, in preteens, perfectionism was associated with sensitivity to rejection, interpersonal difficulties, and feelings of social isolation (Magson et al., 2019). Following these results, one can argue that perfectionism may contribute to subjective disconnection from friends via biases in interpretations and objective disconnection from friends via maladaptive interpersonal behaviors within adult friendships. Still, most research focused on young adults and there is very little research investigating social disconnection in adolescence. One study on adolescents found different relations of concern over mistakes and personal standards with maladaptive social tendencies

(Fletcher & Shim, 2019), suggesting that different perfectionistic dimensions might interact differently with relationship outcomes. However, Magson et al. (2019) found both types of perfectionism to be associated with sensitivity to rejection, interpersonal difficulties, and feelings of social isolation in preteens. Lastly, we found only one longitudinal research on emerging adult friendships, which specifically investigated perceived pressure for perfection within the friendship (i.e., an individual's perceptions of their friends expecting them to be perfect) and found it to be positively associated with increased conflict between friends (Kim et al., 2024). Consequently, how perfectionistic strivings and concerns contribute to adolescents' relationships with their friends across time is yet to be fully understood.

2. THE PRESENT STUDY

Summing up, the PSDM (Hewitt et al., 2017) proposes that nurturing relationships, characterized by safety, acceptance, and belonging, can help shield adolescents from developing perfectionistic tendencies. A source of experiences of support, acceptance, and belonging salient for adolescents may represent their friendships. Thus, friends may contribute to lowering perfectionistic tendencies in adolescents, who feel supported and accepted in their friendships. In contrast, less supportive friendships may contribute to furthering perfectionistic tendencies in adolescents. However, to our knowledge, no research investigated friends' support contributions to perfectionism development.

Additionally, perfectionism may affect friendships and friend support, due to a sense of disconnection, social isolation or even perfectionists' hostile behaviors (Hewitt et al., 2017). Nonetheless, to date, no longitudinal research has investigated the links between perfectionism and adolescents' views of friend support, despite the critical importance of friendships in this life stage.

Considering the previously mentioned gaps in the literature, the present research explores the bidirectional, long-term connections between adolescents' perfectionism and how they perceive support from their friends. In accordance with the PSDM (Hewitt et al., 2017), we expected perceived social support from friends to contribute to relative decreases in perfectionism over time and perfectionism to contribute to relative decreases in perceived support from friends over time. In accordance with previous empirical data, this may be true, particularly for perfectionistic concerns. To examine this, we used an exploratory approach to analyze the links between adolescents' perfectionism and how they perceive support from friends, employing a cross-lagged panel design with two points of data collection three months apart. This timeframe was chosen based on previous studies that have identified shifts in perfectionism over similarly

short intervals (e.g., McGrath et al., 2012; Domocus et al., 2018; Sherry et al., 2013), also considering that reliable changes can be captured within shorter periods (Dormann and Griffin, 2015).

3. METHOD

3.1. Participants

The present study is a component of a more extensive longitudinal project (Domocus & Damian, 2018; Domocus et al., 2022). Two hundred and sixtyfive high-school adolescents aged 14–19 (m_{age} = 17.6; *SD* = 1.1), from 9th to 12th grade, from Romania were recruited for a longitudinal study. The initial sample at Time 1 (T1) included two hundred and sixtyfive adolescents. From this group, one hundred and seventy adolescents also provided data at Time 2 (T2). From this sample, 83% of participants identified as boys, 42.4% living in a rural area, and 57.6% living in an urban area.

3.2. Procedure

The first wave (T1) was collected in 2017 at the start of the 2nd semester of school, followed by a second collection (T2) three months later, at the semester's conclusion. Adolescents completed identical paper-and-pencil questionnaires during school hours at both time points. Participation was entirely voluntary, and adolescents were not compensated for their involvement in this study. The research received approval by the authors' university and the schools' directors via a signed partnership agreement. Parents of participants under the age of 18 received an informed consent form and retained the right to remove their children from participation in the study at any point in time during our research.

3.3. Measures

Perfectionism was measured using both the Child–Adolescent Perfectionism Scale (Flett et al., 2016) and the Multidimensional Perfectionism Scale (Frost et al., 1990). The score for perfectionistic standards was calculated as a mean between the subscales of self-oriented perfectionism (12 items; e.g., *I feel that I have to do my best all the time.*) and personal standards (7 items; e.g., *I expect higher performance in my daily tasks than most people.*). The score for perfectionistic

concerns was calculated as the mean between the subscales socially prescribed perfectionism (10 items; e.g., *I am always expected to do better than others.*), and using the concern over mistakes (9 items; e.g., *If I fail partly, it is as bad as being a complete failure.*), and doubts about actions (4 items; e.g., *It takes me a long time to do something "right".*). Perceived support from friends was assessed using the Perceived Social Support from Friends scale (PSS-Fr; Procidano & Heller, 1983), which consists of 21 items (e.g., *I rely on my friends for emotional support*). For PSS-Fr the translation into Romanian was carried out following established back-translation procedures of Brislin (1986). The items were rated using a Likert scale ranging from 1, meaning *always false for me,* to 5, meaning *always true for me*. All demonstrated strong psychometric properties, as presented in Table 1.

3.4. Data analysis

To begin, the survey responses were examined to identify any missing data and we found that 64,4% of the completed the surveys at both time points, with only 2% missing individual data. Further, we tested Little (1988) 's Missing Completely at Random (MCAR) test (p >.001, chi-square ($\chi 2/df$) of 2.72) which indicated attrition-related bias, thus we followed the recommendations of Graham(2009) using FIML (Full Information Maximum Likelihood).

Next, we screened the data for multivariate outliers, according to Tabachnick and Fidell (2007) and assessed the reliability of the scale scores by computing Cronbach's alpha coefficients (please see Table 1). All scales demonstrated Cronbach's alpha values greater than .80, which we deemed acceptable (Nunnally & Bernstein, 1994). Next, we calculated descriptive statistics and examined bivariate correlations among all variables.

Finally, we computed the main cross-lagged analysis on Mplus version 8.1 (Muthén & Muthén, 1998-2018), using the maximum likelihood (ML) estimator (Muthén & Muthén, 1998-2018). We accounted for autoregressive paths and included all within-time correlations for the model's variables (Geiser, 2013). Model fit was evaluated using multiple criteria (Byrne, 2012): the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR). According to Bryne (2012) 's recommendations, the model presented a good-to-acceptable fit: $\chi 2$ (2) = 5.58, p = 0.0615, CFI = .99; TLI = .92; RMSEA = .08; SRMR = .04; AIC = 2101.133; BIC = 2190.986.

4. RESULTS

Preliminary results found a positive correlation between perfectionistic standards and perceived support from friends within waves; however, across waves, perfectionistic concerns were negatively correlated with perceived support from friends (please see Table 1).

The main analysis results identified that perceived support from friends did not predict significant changes in any of the perfectionism dimensions (please see Figure 1). Thus, the hypothesis of perceived support from friends predicting changes in perfectionism was not supported.

Nonetheless, perfectionistic concerns contributed to a relative decrease in adolescents' perceived support from friends, whereas perfectionistic standards demonstrated no significant longitudinal relationships (please see Figure 1). Thus, the results provide support only for perfectionistic concerns contributing to perceptions of decreasing support from friends, and not for perfectionistic standards.

Table 1. *Bivariate correlations and descriptive statistics*

	1	2	3	4	5	6
1. Perfectionistic standards (T1)						
2. Perfectionistic concerns (T1)	.67***					
3. Perceived support from friends (T1)	.16**	–.08				
4. Perfectionistic standards (T2)	.60***	.46***	.08			
5. Perfectionistic concerns (T2)	.36***	.54***	–.15**	.70***		
6. Perceived support from friends (T2)	–.03	–.20***	.48***	.28***	–.02	
M	3.17	2.72	3.57	3.02	2.69	3.51
SD	0.50	0.57	0.55	0.48	0.47	0.47
Cronbach's alpha	.82	.91	.81	.87	.91	.84

Note. *N* = 261. *p < .05, **p< .01, ***p< .001.

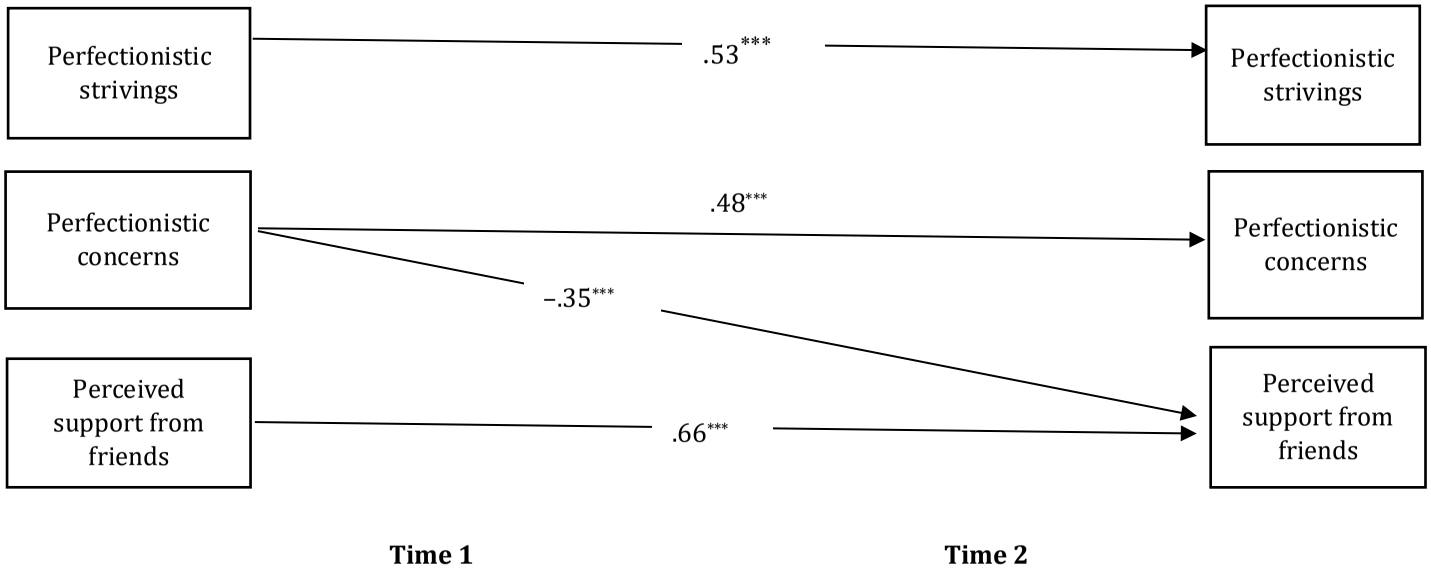

Figure 1. *N* = 261. *Cross-lagged model between perfectionistic standards, perfectionistic concerns, and perceived support from friends.* Only the significant longitudinal results are presented ($p < .05$). All coefficients are standardized. $^{***}p < .001$.

5. DISCUSSION

The present research investigated the reciprocal longitudinal relation involving perceived support from friends and perfectionism in adolescents by employing a longitudinal cross-lagged design with two waves. Previous research noted associations between perfectionism and various factors relating to relationships with peers and friends (e.g., Branett & Johnson, 2016; M). Our preliminary results found a positive association between perfectionistic standards and perceived support from friends within waves; however, across waves, only perfectionistic concerns were negatively associated with perceived support from friends. This emphasizes that perfectionistic standards and perfectionistic concerns may act very differently within friendships.

Contrary to our hypothesis, perceived support from friends did not significantly contribute to changes in perfectionism. Although the results do not confirm the hypothesis that supportive relational experiences act as safeguards against perfectionism, they also do not completely negate this possibility. An explanation for the present results may be that strong and stable cognitive appraisals of relationships had already developed in childhood inside the caregiver-child relationship. Thus, further changes in perfectionism may need stronger and more intense experiences of acceptance and unconditional support from friends to fight perfectionistic biases or a longer time to impact perfectionism development in any form. Changes in perfectionistic standards and concerns that occur naturally might take longer to manifest than we originally expected. Also, future research may consider experimental designs targeting the development of supportive and accepting friendships and their long-term impact on perfectionism. Furthermore, perfectionism may already be more stable in mid-to-late adolescence. Thus, future research should consider younger ages, when perfectionistic tendencies are less stable, to explore this relationship further.

Consistent with our expectations, perfectionistic concerns predicted relative declines in adolescents' perceived support from friends, while perfectionistic standards showed no significant longitudinal associations. These findings support the idea that perfectionistic concerns undermine adolescents' connections with their friends. This aligns with the social disconnection model, which proposes that perfectionism may foster interpersonal struggles, resulting in feelings of being socially disconnected (Hewitt et al., 2017). These suggest that adolescents who are preoccupied with mistakes, doubtful about their actions, and who adhere to socially prescribed pressures may experience social disconnection in their friendships, indicated by decreasing perceived support from friends. This may be due to biased perceptions of support from friends. More specifically, interpersonal hypersensitivity to rejection could lead to subjective evaluations

of lack of needed support from friends, as previously remarked by cross-sectional research (Barnett & Johnson, 2016; Magson et al., 2019; Roxboughrough et al., 2012; van der Kaap-Deeder et al., 2017). Additionally, these perceptions of lower support from friends may be informed by objective lowering of support due to perfectionistic individuals' tendencies for interpersonal hostility, abruptness in communication, conflict, and aggressiveness (Barnett & Johnson, 2016; Hewitt et al., 2020; Magson et al., 2019; Roxboughrough et al., 2012; van der Kaap-Deeder et al., 2017). Future studies should further explore this by investigating both the subjective experience of the adolescent as well as objective accounts of support within their friendships.

Consequently, perfectionistic concerns may be an important risk factor impacting social support and friendship quality. Considering this, schools and mental health professionals should monitor adolescents' perfectionistic tendencies and social support levels to identify at-risk individuals early and provide timely interventions. These interventions should focus on helping adolescents manage their perfectionistic concerns (e.g., fear of failure, perceived pressure to be perfect) to prevent the erosion of social support and create support systems to reduce the likelihood of social isolation. Additionally, interventions could include social skills training to help adolescents with perfectionistic concerns communicate their needs and manage interpersonal relationships more effectively.

The present study is not without its limitations, which should be carefully considered when interpreting the findings. First, the study specifically focused on adolescents, which limits the generalizability of our findings to this developmental stage. Future studies should aim to replicate and extend these findings by including younger participants, such as children or early adolescents. This is particularly relevant because perfectionism is likely to be less stable and more malleable during earlier developmental periods, potentially making social support a more influential factor in shaping perfectionistic tendencies. By broadening the age range, researchers could gain a deeper understanding of how perfectionism and social support interact across different stages of development. Second, when investigating reciprocal relationships between variables, some of the expected effects may unfold over more extended periods, such as the role of support from friends in shaping perfectionism, while other expected effects may have shorter optimal intervals, such as the role of perfectionism in shaping social support from friends (cf. Dormann & Griffin, 2015). Future studies should consider this and employ mixed longitudinal designs, including multiple measurements for shorter and more prolonged effects. Future studies should aim to explore this relationship over extended time periods, incorporating multiple waves of data collection to build upon the current findings and mitigate any potential biases or influences related to the timing of data collection. By

adopting a longitudinal design with several measurement points, researchers could capture more nuanced changes in perfectionism and perceived social support over time, providing a clearer picture of how these constructs interact and evolve. Additionally, the present study focused exclusively on adolescents' perceptions of support received from friends, which, while valuable, offers only one perspective on the dynamic interplay between social support and perfectionism. Future research should expand this scope by examining both adolescents' and their friends' perceptions of support, as well as incorporating objective measures of the support actually received. This dual-perspective approach would provide a more complete understanding of how support functions within friendships and its relationship with perfectionism. Furthermore, future studies could investigate potential mediators of these relationships, such as emotional regulation, or interpersonal trust, to uncover the underlying mechanisms through which social support influences perfectionistic tendencies. By addressing these gaps, future research could offer deeper insights into the complex dynamics between perfectionism and social relationships.

6. CONCLUSIONS

Although this study has its limitations, it is one of the first to explore the bidirectional relationships between perfectionism and perceived social support from friends longitudinally, during middle to late adolescence, a developmental stage in which friendships grow increasingly significant and influential for the individual. As a result, we found that perfectionistic concerns may contribute to relative decreases in perceived social support from friends, suggesting potential biases of perfectionism hindering relationships, in accordance with the perfectionism social disconnection model (Hewitt et al., 2017). The present results emphasize the role perfectionistic concerns play in shaping adolescents' friendships, as well as reiterating its potential risks for the interpersonal relationships of individuals with perfectionism.

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Self-deception Beyond Speculation: A Narrative Review of the Empirical Research on Motivated False Beliefs

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ABSTRACT. This narrative review explores the concept of self-deception, departing from its theoretical foundations in philosophy and psychology, and focusing on the pioneering empirical methods used to study it. We first outline key philosophical debates surrounding intentionality and paradoxes surrounding the concept of self-deception and then discuss influential psychological theories. The review covers major paradigms for measuring self-deception, such as the retrospective and forward-looking paradigms for situational self-deception and approaches focused on self-deception as a response bias, trait, or disposition. Our primary aim is to present the outcomes of the limited body of empirical research investigating motivational factors in self-deception, rather than theoretical speculations. We examine studies on both internal motivations (e.g., maintaining self-concept) and external motivations (e.g., deceiving others), highlighting how different motivational contexts influence the likelihood and extent of self-deception. Finally, we examine potential limitations, explore future research directions, and consider the broader implications of focusing on this particular aspect of self-deception, the motivational reasoning.

Keywords: self-deception, motivation, motivated false beliefs, external motivation, internal motivation

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"Do you see over yonder, friend Sancho, thirty or forty hulking giants? I intend to do battle with them and slay them."
Miguel de Cervantes Saavedra, *Don Quixote* (Pass, 2024)

INTRODUCTION

Self-deception is a complex phenomenon studied across multiple disciplines, including literature, philosophy, psychology, evolutionary biology, and behavioural economics (Mele, 2001; von Hippel & Trivers, 2011; Chance et al., 2011). Psychologists' interest in this phenomenon followed anecdotal evidence of psychoanalytical therapy cases (e.g., rationalisation, repression, projections and denial, Freud, 1960; an idea still present in contemporary research, see Westland & Shinebourne, 2009). According to psychoanalytic views, self-deception is an intrapersonal, adaptive defence mechanism in which individuals engage to avoid thinking of painful truths (Johnson, 1995). Over the years, some authors proposed the overlap of two concepts (e.g., repression and self-deception or denial and self-deception, Baumeister & Cairns, 1992), while other authors attempted to differentiate self-deception from other allegedly defensive mechanisms (e.g., repression, Gur & Sackeim, 1979; see also Asley & Holtgraves, 2003; Tomaka et al., 1992).

During the past decades, pioneering empirical psychological articles have been published, shedding some light on possible mechanisms and functions (Chance et al., 2011; Chance & Norton, 2015; Liu et al., 2025; Mei et al., 2023; Ren et al., 2018; Mijović-Prelec & Prelec, 2010; Smith et al., 2017). However, significant differences among scholars regarding its precise definition and underlying mechanisms remain (Bachkirova, 2016; Balcetis, 2008; Khalil, 2017; Mele, 1997; von Hippel & Trivers, 2011; Paulhus & Holden, 2010; Fan et al., 2022).

Furthermore, psychoanalytic constructs such as repression have been at the centre of a heated scientific debate due to their implications for memory recovery in abuse cases. For instance, the beliefs of therapists in repression have been linked with false memories, which could have severe consequences in the legal field (see Battista et al., 2023; Otgaar et al., 2019). However, studies on self-deception are yet to address fundamental aspects of the phenomenon, such as the systematic investigation of mechanisms that could lead to the successful formation of self-deception (Mele, 2000; Sackeim & Gur, 1979; von Hippel & Trivers, 2011).

Additionally, a substantial part of scientific literature on self-deception consists of theoretical and essentially speculative postulates (e.g., Balcetis, 2008; Mele, 2001; Lauria et al., 2016; von Hippel & Trivers, 2011). These

proposals focus on different ways of understanding the phenomenon of self-deception, and they are not necessarily followed by empirical studies examining or testing the proposed models or hypotheses (but see von Hippel & Trivers, 2011; Smith et al., 2017).

The paucity of concrete empirical evidence of self-deception highlights a significant gap in understanding this concept. Furthermore, the interchangeable use of terms like motivations (reason or reasons for acting or behaving in a particular way), mechanisms (an established process by which something takes place or is brought about), or functions (purpose) of self-deception contributes to its limited conceptual validity despite its importance in everyday life, and especially in legal contexts where false beliefs could lead to judicial errors.

From Philosophical to Psychological Perspectives on Self-deception

Philosophical approaches to self-deception focus on defining *why* self-deception happens in individuals and the minimal *necessary conditions* for self-deception to occur (Gur & Sackeim, 1979; Mele, 2001). Initially, more influential philosophical theories of self-deception were modelled on intrapersonal deception. These attempts at defining and explaining self-deception led to two paradoxes (Mele, 1997, 2001). The static paradox of how the self-deceived individual would have to hold simultaneously two contradictory, incompatible beliefs (e.g. thinking that "loyalty in romantic relationships is very important for me", by a person who cheated on their partner repeatedly). The dynamic paradox is more related to the process of self-deception, rather than a product, and it refers to the process through which a person intentionally acquires a belief while remaining unaware of that belief. To address these paradoxes, the two most influential views in philosophy regarding the conceptualisation of self-deception were postulated: the deflationary (non-internationalist) and the inflationist (internationalist) views.

In the *inflationist* view, the static and dynamic paradoxes are addressed using the psychoanalytic perspective, which divides the self into distinct parts that could be in conflict (one "part" holds a belief, while the other holds a contradicting belief). For example, some theories of self-deception were based on the idea of the split between the conscious and unconscious (Jian et al., 2019; von Hippel & Trivers, 2010). While the existence of a structural partition of the mind is still postulated (e.g., Schwardmann & van der Weele, 2019) these perspectives rather describe self-deception as related to or biases in information processing processes (i.e., information gathering; Smith et al., 2017; information processing and memory processes, von Hippel & Trivers, 2011) and belief formation (Mijović-Prelec & Prelec, 2010).

Conversely, in the *deflationary* view, proposed by Mele (1997, 2000, 2001), the static and dynamic paradoxes are denied. Instead, it is argued that self-deception is a general category of motivated-biased judgment (Mele, 1997). This view proposes that self-deception is not intentional and there is no separate "deceiver" and "deceived" in our mind, suggesting that at no moment must the individual believe in two contradictory beliefs at the same time. The minimal conditions that deflationary philosophers agreed upon were that "self-deception involves an individual who acquires and maintains some beliefs despite contrary evidence and who may display behaviours suggesting some awareness of the truth, as a consequence of some motivation" (Mele, 2001; Sackeim & Gur, 1979).

Deriving from early psychoanalytical and philosophical works, the *psychological* literature on self-deception has been divided for decades between two perspectives regarding the motives and mechanisms of self-deception. One of these is an *intrapersonal* perspective in which the self-deceivers are deceiving the self for their own benefit, which is to protect the self from threatening information (Freud, 1946; Mele, 2000; Sackeim & Gur, 1979; concept similar to the literature on psychoanalytic denial and repression). On the opposite end is the *interpersonal perspective* in which the self-deceiver is proposed to be deceiving the self in order to better deceive others (for example, being a byproduct of other-deception; Schwardmann & van der Weele, 2019; von Hippel & Trivers, 2011). Some authors propose that the two perspectives do not have to be mutually exclusive or situated at opposite ends of a spectrum; rather, the proposed intrapersonal and interpersonal motivations and mechanisms could be interdependent (for example, financial gains and increased confidence; Mijović-Prelec & Prelec, 2010).

Furthermore, over the years, self-deception was mostly described in the psychological literature either as a negative (yet adaptive) or defensive phenomenon (a defence mechanism; such as denial, or repression, Johnson, 1995; self-protection, Alicke, & Sedikides, 2009; Greve & Wentura, 2010) or as a positive, more offensive construct, focusing on enhancing and attributing positive and desirable traits to oneself, often associated involved in positive illusions and optimism (Robinson, et al., 2009; Taylor, 2003). The more negative perspective of self-deception as denial, repression, and self-protection has been more at the centre of the psychological literature at the end of the past century (Baumeister, 1996; Sackeim & Gur, 1978). During the last two decades, the focus has been more on the positive, self-enhancing dimension of self-deception (Chance et al., 2011; 2015; von Hippel & Trivers, 2011; Liu et al., 2019; Mei et al., 2023).

Additionally, self-deception has been discussed as a process (describing the mechanisms of how self-deception takes place within the individual, e.g., motivated cognition, Balcetis, 2008; von Hippel & Trivers, 2011) as well as a product (e.g., false self-beliefs which are stated; Balcetis, 2008; Mijović-Prelec & Prelec, 2010). While focusing on the process of self-deception is important, some authors point out that for self-deception to be achieved, subjects must "lie to themselves successfully", meaning they have to convince themselves that something false is true (Paulhus, 2007; Sloman et al., 2010).

Beyond theoretical definitions, the psychological literature focused for the first time on operationalising self-deception for conducting empirical studies (e.g., Sackeim & Gur, 1979). While many paradigms have been developed or proposed, we will summarise below some of the most pivotal perspectives developed in psychological research during the past decades.

Operationalization and Measurement of Self-deception in Psychological Research

Empirical research on self-deception in psychology has taken two main approaches: examining self-deception as a *trait, disposition,* or *response bias* (mostly correlational studies; Paulhus, 1991), or investigating it as a *situational behaviour* through experimental paradigms (Chance et al., 2011; Gur & Sackeim, 1979; Mei et al., 2023).

Gur & Sackeim (1979) conducted one of the first *experiments* in the field to elicit self-deception and prove its existence. This study investigated the coexistence of two incompatible beliefs by having participants identify and categorise a speaker's voice (their own voice vs. others' voices; all previously recorded). The voice recognition task was accompanied by physiological indications (galvanic skin response). When the participants' verbal assessment, 'this is not my own voice,' conflicted with their physiological assessment showing reactions that could be interpreted as recognition of one's voice, this was taken as evidence of self-deception. Furthermore, participants were given either "success" or "fail" feedback before the voice identification task. The researchers predicted that the "fail" group would commit more misidentifications of self, while the "success" group would commit more misidentifications of others. The results, which were in line with the predictions made, were interpreted by the authors as confirming the hypothesis that self-deception was influenced by the tendency to minimise the discomfort (i.e., cognitive discrepancy) felt by the participants, making the case for motivated false beliefs.

Another early pioneering attempt at eliciting self-deception was made by Quattrone & Tversky (1984). They conducted an experiment where subjects were asked to keep their hands submerged in a cold water container until they

could no longer tolerate the pain. Afterward, during a debriefing, participants were informed that a certain inborn heart condition could be diagnosed by the effect of exercise on cold tolerance and told that "the consequences of this condition included a shorter lifespan and reduced quality of life". Some subjects were told that having a bad heart would increase cold tolerance, while others were informed of the opposite (including charts designed with the same info). After the debriefing, the subjects were told to exercise for a minute and then to repeat the cold water tolerance test. The majority of the participants showed changes correlated with the "good news" and "cheating on their own diagnostic". In a similar study, Kunda (1987) asked participants (women) to evaluate the credibility of a (fake) study linking coffee consumption and breast cancer, and results showed that self-reported heavier drinkers of coffee were more critical and less persuaded by the evidence provided. This suggested that participants kept their attitudes to match their previous behaviours despite receiving contradictory evidence. Thus, it was concluded that the favoured beliefs receive preferential treatment in information processing. A more recent study (Fernbach et al., 2014) using this paradigm, showed that when asked about the effort task, participants misrepresented the effort they put into the task in a self-serving way, minimising it when it was offering them a good diagnostic (e.g., skin quality), which is different than the effort they actually put in.

These early attempts at eliciting self-deception suggested the possibility of contradictory beliefs associated with some motivations (e.g., reduced cognitive discrepancy, belief-consistent information processing). However, these attempts to explain self-deception were also the subject of criticism. One main critique was that, for example, physiological data or observed behaviour should not be assumed to directly equate to the presence of a belief (Mijović-Prelec & Prelec, 2010). Moreover, while these paradigms focused mainly on reactions to past behaviours (retrospective), more recent paradigms elicit self-deception using future, hypothetical situations (e.g., forward-looking paradigm, Chance et al., 2011). This critique might partially explain why the initial empirical approaches to eliciting self-deception were not significantly pursued later in the literature.

Proposed as a better attempt to measure the false beliefs necessary to show that self-deception has been elicited, the *forward-thinking paradigm* involves participants taking a test, with half being given access to the answers (e.g., answers are included at the end of the test), thus being offered a possibility to cheat. After the initial test, participants are asked to predict their future performance in a hypothetical test without answers. In some studies, a second test is also given to calculate the differences between future estimations and actual performances in a second test. However, the paradigm is focused on the differences between the estimations of a group that did not have access to the answers compared with a group that did have access. The typical finding using this paradigm is an

overestimation of the (hypothetical) future performance, interpreted as self-deception, with participants who had access to answers in the first test predicting significantly higher scores for the second test compared to the group without access to the answers, despite both groups knowing they do not have the answers for the second test (Chance et al., 2011, 2015; Fan et al., 2022; Jian et al., 2019; Liu et al., 2019; Mei et al., 2023).

To sum up, most experimental paradigms looking at situational self-deception focus on the inconsistency between past behaviour in a real event (e.g., a test; seen as contradictory evidence) and the individual's evaluation or estimation of past or future experiences (e.g., tested as reaction, behaviour or self-assessment, thus the indication or the false belief).

When approached as a *trait, disposition,* or *response bias*, self-deception has been mostly studied using the rationale that people tend to deny negative qualities about the self and enhance positive ones (Sackeim & Gur, 1979; Paulhus & Reid, 1991). Sackeim & Gur (1979) developed the first questionnaire to measure self-deception (Self-Deception Questionnaire, SDQ) which was later modified and further validated by Paulhus and Reid (1991) as the Balanced Inventory of Desirable Responding (BIDR, Paulhus, 1991; later known as Paulhus Deception Scales, PDS, Paulhus, 1998).

Paulhus and Reid (1991) further distinguished between self-deceptive denial and self-enhancement, with self-deceptive denial characterised by the denial of negative information and self-enhancement by the tendency to inflate positive characteristics related to oneself. However, the Self-deceptive Denial Scale (SDD) of the BIDR measure was later dropped as psychometric properties showed that the items contained were more consistent with the other construct of the measure, construct which is directed more towards other deception, namely impression management (a conscious attempt at showing a socially desirable image towards others, Paulhus, 2002). The Self-Enhancement Scale contains items worded positively and negatively (thus reflecting also the denial aspect), summarised in a total self-deceptive enhancement score (Paulhus, 2002).

In empirical studies, self-deceptive enhancement has been used especially when using self-reported measures and assessments as a way of increasing the validity of measurements (Vigil-Colet et al., 2012) and as part of the construct of social desirability and the proposed tendency to dissimulate in more legal contexts (Crowne & Marlowe, 1960; Hilderbrand et al., 2018; Paulhus, 1991). Some studies looked at the association of self-enhancement with other constructs such as personal adjustment (Dufner et al, 2019; Sheridan et al., 2015; Taylor et al., 2003), anxiety (Sheridan et al., 2015), or personality (e.g., Dark Triad, Wright et al., 2012).

However, there is a debate in the scientific literature on how to best approach self-deceptive enhancement tendencies: as a response style, a personality trait, or a disposition (Barry et al., 2016). While there are some proponents of treating self-deceptive enhancement more as a disposition or personality trait (Mills & Kroner, 2005; Vigil-Colet et al., 2012) which adds unique variance to some phenomena (e.g., violent recidivism, Mills & Kroner, 2005), many correlational studies include self-deception as a potential confounding variable operationalising self-enhancement as a response bias, particularly when measuring constructs sensitive (or less sensitive) to self-presentation effects such as aggression or dynamic risk factors (for discussions regarding this see also Hilderbrand, et al., 2018; Vigil-Colet et al., 2012).

The role of self-deception (and social desirability) in measuring other constructs is often difficult to assess due to underreported findings about how this measure was used. For example, studies reporting only that their final results were controlled for response bias, but not the actual steps or studies frequently reporting a single total score for social desirability. However, there is evidence suggesting that the two components of social desirability, self-deceptive enhancement, and impression management, may have distinct associations with the outcomes and certain factors differentially influencing them (e.g., in the relation between dynamic risk factors, sample size, or setting (e.g., incarcerated) selectively influencing self-enhancement, but not impression management (Hildebrand et al., 2018; Tan & Grace, 2008). Furthermore, recent research has shown that impression management is more susceptible to context than self-deceptive enhancement (e.g. when assessing aggression in a prison setting, Mills & Kroner, 2005). The latter is proposed to be more related to general universal aspects of one's self-image. However, when talking about culture, it is important to emphasise that self-deceptive enhancement was found to be sensitive to culture. For example, East Asian countries show less self-enhancement than WEIRD (Western Educated Industrialized Rich Democratic) countries (Hampton & Varnum, 2018).

Using these paradigms for situational and dispositional or trait self-deception, empirical research has been conducted which investigates the role of internal and external motivations in self-deception. Motivations for engaging in self-deception are mentioned in many theoretical works as one of the main distinctive features of self-deception, compared to merely acquiring false beliefs (Mele,1998; von Hippel & Trivers, 2011). However, studies are scattered and often treat motivations separately, making it difficult to have an overview. Our focus for the next section is to look at some examples of empirical studies that investigate different motivations and to portray a more comprehensive picture of these findings.

Self-deception as Motivated False Beliefs: Empirical Evidence

The proposed motivations for engaging in self-deception can be split into two types or categories: internal or self-oriented (mirroring the intrapersonal perspectives on self-deception) and external or other-oriented (mirroring the interpersonal perspectives on self-deception). The internal motivations are given by one's internal state (e.g., behavioural tendencies of approaching good and avoiding bad; Tice & Masicampo, 2008), and the external motivations refer to external gains and benefits (e.g., avoiding punishments by deceiving others successfully; von Hippel & Trivers, 2010).

While internal and external influences are frequently discussed in research about lying to others (e.g., DePaulo et al., 1996; Otgaar et al., 2023), these categories and relevant empirical data have not been presented, to our knowledge, in a single, comprehensive review with regard to self-deception. Preceding narrative reviews presented an overview of some of these motivations and empirical findings, however, the focus was on interpersonal and external motivations (for example, Chance & Norton, 2015; von Hippel & Trivers, 2011).

Furthermore, empirical studies investigating motivations for self-deception have often focused on a single motivation or perspective, such as deceiving others (e.g., Lu et al., 2014), or focused mainly on external motivations (e.g., financial incentives, social recognition, Chance et al., 2011). Including internal motivations is highly relevant as their impact and association with self-deception may differ. For instance, Hirschfeld et al. (2008) studied 429 college students and found that trait self-deception was positively associated with intrinsic motivations but negatively associated with extrinsic motivations. This suggests that individuals with higher self-deceptive tendencies report being more motivated by internal goals than external factors. Fewer studies explored the interplay between external and internal motivations, suggesting their interdependence and mutual influence (e.g., increased confidence and financial motives; Mijovic-Prejelec & Prelec, 2010).

The following sections of this review will examine empirical research on motivations for self-deception, beginning with external ones and then exploring internal motivations (see Table 1 for an overview of the proposed motivations in psychological research).

Table 1. *External and Internal Motivations for Self-Deception in Psychological Research*

External Motivations	Internal Motivations
Gaining benefits	Increased confidence in oneself
Social validation and/or social recognition	Decrease in negative short-term affect
Deceiving others better	Reduced cognitive discrepancy or dissonance
Gaining financial incentives	Increased subjective well-being
Avoiding punishments	Increase in short-term positive affect
	Maintenance of (moral) self-concept
	Approaching good and avoiding bad (behavioural tendencies)
	Reduced cognitive load
	Avoiding threatening information

EXTERNAL MOTIVATIONS

Some of the most iterated external motivations for self-deception studied or proposed in the literature are gaining benefits or avoiding punishments (e.g., punishment for deception, von Hippel & Trivers, 2011; financial incentives, Mijović-Prelec & Prelec, 2010), social validation and/or social recognition (Baumeister & Cains, 1992; Chance et al., 2011; Dufner et al., 2019; Lamba & Nityananda, 2014), and deceiving others (Lu, 2012; von Hippel & Trivers, 2010; Smith et al., 2017).

Financial Incentives

Self-deception has been successfully elicited in experimental studies using financial incentives. Many paradigms studying deception and self-deception relied on monetary incentives to increase the deceptive behaviours in the laboratory (Chance et al., 2011, 2015; Lu et al., 2014; Mijović-Prelec & Prelec, 2010; Peterson et al., 2003). However, most studies do not primarily focus on financial incentives, and only a few studies have directly examined the role of monetary rewards and self-deception.

For example, the anticipation of a financial gain led participants (N = 85, students) in Mijović-Prelec and Prelec (2010) to engage in 20% more instances of self-deception in a categorisation task (abstract categorisation of drawings). In this study, self-deception was operationalised as an adjustment of a categorisation decision based on a previously anticipated categorisation. More specifically, participants rated a Korean written sign (character) as appearing to be more

male-like and were asked to anticipate what character would be next shown. When they predicted that a female-like-looking character would follow, and were offered the opportunity to receive an additional incentive, given only when the anticipation was "confirmed", they were more likely to rate the next character as actually female-like, even if before (in the initial categorisation task) they qualified the same character as male-like. Thus, participants adjusted their categorisation decisions (self-deception) to align with their anticipated outcomes to gain more financial incentives.

In another study, using the forward-thinking paradigm, Chance et al. (2011) explored whether using financial incentives for accurate future estimations would lead to a decrease in self-deception, thus less inflated performance estimations. They found that participants continued to show self-deceptive behaviours even when this led to not gaining money. Similarly, in a study by Peterson et al. (2003), 13-year-old boys and young adults participated in gambling-type card tasks in which higher performance led to more monetary gains. Looking at trait self-deceptive enhancement, participants were split into low and high self-deceivers. High self-deceivers played more cards and won significantly less money, even though they received evidence of error (they were informed that 19 of the last 20 cards were losing).

Taken together, these results suggest that when offered monetary benefits which favour deception (and self-deception), self-deception increases. However, self-deception does not decrease when financial incentives are given for the truth. While not focused on self-deception directly, in another study that looked at overclaiming participants and financial incentives, Mazaar et al. (2008) manipulated monetary amounts and types of financial gains (e.g., money vs. tokens). This study showed that individuals were dishonest to a limited extent and that the amount of dishonesty was not as much influenced by more financial incentives, thus raising the question of the limitations when engaging in self-deception for monetary gains.

Deceiving or Persuading Others

The postulate that self-deception has evolved to better deceive others has been proposed by Trivers (Trivers, 2000; von Hippel & Trivers, 2011). A few empirical studies tested this theory, showing some initial validation. For example, Smith et al. (2017) tested the hypothesis that self-deception evolved in service of persuasion and conducted an experiment in which participants were asked to write a persuasive text about an individual who behaved in a manner that was initially consistent or inconsistent with their persuasive goals (to convince others that a person was likeable or dislikeable). Participants were

shown brief videos depicting a person engaging in positive (e.g. helping someone in distress), neutral (e.g. making lunch), or negative (e.g. stealing money) behaviours. Furthermore, they were told that if their text is rated as persuasive by others, they will earn more money, and they also gave their private opinion of the person depicted in the videos. The results supported their hypothesis, thus, the participants biased their information-gathering strategies (gathering less information and the information that supports their view) and convinced themselves of its veracity, being more efficient in convincing others when they themselves believed it.

In another study, Lamba & Nityananda (2014) looked at self-deception and the comparison between participants' self-evaluations, others' evaluations, and actual behaviours. They tested if individuals' false beliefs about their abilities can influence how they are perceived by others. In their study, participants were college students (N = 73) for whom their performance and their self-evaluations versus the evaluation they received from their peers regarding their abilities were measured at the beginning and end of a semester. In this study, it was shown that overconfident individuals were more convincing and judged as better rated than underconfident individuals, who were judged less able than they actually were. However, this effect decreased in time and with extended interactions, showing that as individuals' levels of self-deception changed, their peers' judgments of them also changed. Additionally, participants' self-deceptive predictions about themselves were not correlated with their actual performance. This decrease in time and with extended interactions was also found by Dufner et al. (2019) in a meta-analysis, which looked at dispositional self-deception and interpersonal adjustment across multiple studies.

Another study (Wright et al., 2015) which looked at trait self-deception (using the self-deceptive enhancement scale described in the previous section) showed that high self-deceptive individuals (using a median split) were less credible and less confident when lying during a deception detection paradigm (in which participants have to lie and tell the truth regarding some of their previously recorded social attitudes in front of a group and rate how convinced they were of others lies).

Using another method and perspective (focusing on memory), Lu & Chang (2014) tested what happens with the recognition of studied items when participants (Chinese college students) had to deceive an equal or a higher-status individual (e.g., a teacher). They tested their memory for the previously studied items after the interaction with the deceived target, when the participant was alone. The results showed that when interacting with a high-status, but not with an equal-status individual, participants remembered fewer previously studied items than on a second memory test alone. These findings

suggest that during a situation in which one is more concerned about the consequences of being caught, one might temporarily self-deceive, suggesting that the theory of self-deception to deceive others might be supported.

Social Recognition and Validation

In the case of social recognition, a few studies also tried to examine if receiving social recognition or validation might lead to an increase in self-deception.

One of the first studies investigating the effect of social context on self-presentation strategies and reactions to feedback by participants was focused on "repressors" (operationalized as participants high in social desirability and low on anxiety), a construct which was seen as an equivalent to self-deceivers (Baumeister & Cains, 1992). Findings of this study showed that when being exposed to others' opinions, repressors were more concerned about their image, and recalled more of the negative feedback than when they received feedback privately. Participants were more susceptible to social validation, which led to a decrease in their ability to ignore negative feedback, attributed to engaging in self-deceiving strategies.

In another study, Chance et al. (2011) offered participants the possibility of receiving a certificate for their performance on a test and found that the participants who had this opportunity had more inflated self-estimations for a hypothetical future performance, thus higher self-deception. Similarly, Yang et al. (2024) gave participants social comparison feedback regarding their performances (e.g., you performed better or worse than your colleagues). Participants told that they performed worse than others showed higher self-deception (in estimating their future performance) compared with the participants being told they performed better (thus given self-affirming feedback). These results suggest that social validation and recognition might be a motive for situational self-deception.

Looking at trait or dispositional self-enhancement, in a meta-analytic review, Dufner et al. (2019) showed that self-enhancement was associated with a more positive assessment by others during a first meeting. However, this effect faded in the long term. Similarly, Lamba and Nityananda (2014) showed that individuals who rated themselves higher in their performance (e.g., university subjects) were also rated higher by others. However, this effect decreased over time, with extended interactions, showing that as individuals' levels of self-deception change, their peers' judgments of them also change. Thus, while social recognition and validation might be a motivation or associated with self-deception, this effect or benefit might be present in the short term and fade in the long run.

Internal Motivations

Internal motivations for self-deception proposed to date and studied in the literature are increased confidence in oneself (Mijović-Prelec & Prelec, 2010), a decrease in negative short-term affect, cognitive discrepancy (Sackeim & Gur, 1979), or cognitive dissonance (Merchelbach & Merten, 2008; Otgaar et al., 2023), increased subjective well-being (Baumeister & Cains, 1992) and increase in short-term positive affect, the maintenance of (moral) self-concept (Baumeister & Cains, 1992; Lu & Chang, 2011; Maazar et al., 2008), behavioural tendencies of approaching good and avoiding bad (Tice & Masicampo, 2008), and reduced cognitive load (Butterworth et al., 2022; Jian et a., 2019; von Hippel & Trivers, 2010).

While proposals such as approaching good and avoiding bad have not yet been tested (Tice & Masicampo, 2008), other motivations have been investigated in some empirical studies. Below, we will explain each motivation and review some empirical studies that addressed them.

Increased Confidence in Oneself

The tendency to be overconfident in our everyday abilities, skills, and personal traits by attributing success to internal factors and failure to external factors has long been documented (Miller & Ross, 1975) under the term "self-serving bias". It has been widely accepted as a fundamental need to maintain positive beliefs about oneself (Sedikides & Alicke, 2012), but see also self-verification theory, which posits that people search for information coherent with their self-view (Swann & Buhrmester, 2012).

Von Hippel & Trivers (2011) postulate that self-deception is associated with a higher confidence in one's abilities, which supports successful deception. However, only a few studies have investigated self-deception, especially situational, and measured confidence separately. For example, Mijović-Prelec & Prelec (2010) have shown that self-deception leads to increased confidence ratings (their confidence in their choice in a categorisation task), however, this increase in confidence was present only in the case of moderate self-deceivers. When the self-deception was higher in individuals, confidence decreased following contradictory evidence.

In another study, Schwardmann & van der Weele (2018) investigated what would happen if participants were offered the opportunity to receive gains from deceiving others; would this lead to overconfidence in one's performance and make the more overconfident participants more convincing to others? Their results showed these effects, thus supporting the theory that overconfidence is

related to self-deception. However, another study where self-deception was measured as a trait (Wright et al., 2015) showed that self-deceptive individuals were less credible and less confident when lying. These differences could be due to different measures and procedures used to measure self-deception (situational vs trait).

Psychological Adjustment, Subjective Well-Being, and Affective States

When looking at self-deception or self-deceptive enhancement and *subjective well-being* a positive association with personal adjustment or positive characteristics is usually reported, plus a negative association with unfavourable characteristics or states (anxiety, depression, etc.) (Baumeister, 1993; Duftenr et al., 2019; Robinson and Ryff, 1999; Taylor et al., 2003). As early as 1989, Taylor (1989) noted that individuals who made overly positive self-evaluations had higher self-esteem, reported greater happiness, showed a heightened ability to care for others, and experienced an enhanced capacity for creative and productive work. Thus, self-deception was proposed to serve as a buffer against negative emotional states, enhancing subjective well-being (Taylor et al., 2003).

To date, research findings mostly on dispositional self-deception indicate that individuals exhibiting higher levels of self-deception tend to report greater overall positive psychological traits. For example, a study by Erez et al. (1995) showed that trait self-deception mediated the relationship between affective dispositions, locus of control, and subjective well-being, both when reported by self as when reported by others (N = 219 self-report and N = 211 self and significant others' reports). In a more recent meta-analysis by Dufner and colleagues (2019), which examined the association between self-enhancement and personal adjustment, self-enhancement was positively and robustly related to personal adjustment across sex, age, cohort, and culture. Another study showed that individuals tend to view their future selves more positively, with self-deception contributing uniquely to predicting future happiness, but not past happiness evaluations (Robinson & Ryff, 1999).

However, while self-deceptive enhancement accounts for a percentage of the variance in psychological subjective well-being, when seen as a trait or disposition, it could also be these associations are due to self-enhancement being a confounded variable meaning a positive response tendency that leads to inflated scores on well-being measures (Wojcik & Ditto, 2014). To our knowledge, the relationship between subjective well-being and situational self-deception has not been investigated.

Moreover, while dispositional self-deception has been shown to have benefits in the long term due to its associations with subjective well-being and

personal adjustment (Dufner et al., 2019), some authors point out that in short-term self-deception might be associated with situational *negative affect* (Mele, 2000; Merchelbach & Merten, 2012; Sackeim & Gur, 1979). This negative affect might be felt before engaging in self-deception; however, after engaging in self-deception, there might be a decrease in negative affect or discomfort and an immediate increase in *positive affect* (Chance et al., 2011; 2015; Lauria et al., 2016). Robin and Beers (2001) showed that in college students, inflated self-perceptions were associated with increased positive affect immediately after task performance. However, in this study, in the long term, self-deceptive enhancers showed a decrease in subjective well-being. Furthermore, at the end of the academic year, individuals with inflated perceptions of their academic ability did not receive higher grades than did individuals with more realistic appraisals of their ability.

While self-deception and more specifically dispositional self-deception (self-enhancement) and increased subjective well-being have been studied more extensively (Dufner et al., 2019; Taylor et al., 2003), the relation with decreased anxiety and depression, the reduction of cognitive dissonance and reduced cognitive load have been addressed sporadically in only a handful of studies (Gur & Sackeim, 1979; Jian et al., 2019; Mijović-Prelec & Prelec, 2010; Sheridan et al., 2015).

Cognitive Discrepancy or Dissonance

Cognitive dissonance has been proposed by Festinger (1954) to represent the feeling of discomfort that arises when a person holds a different belief than their behaviour (e.g., cheating is wrong, but they are cheating on their romantic partner). This inconsistency between beliefs or attitudes and behaviour is very similar to the conceptualisation of self-deception. However, in cognitive dissonance, the emphasis is placed on the discomfort felt (e.g., guilt, shame), while in self-deception, the emphasis is on the way the situation is handled (e.g., changing the belief to excuse the behaviour). Thus, for example, if *cognitive dissonance* is present after engaging in unethical behaviour (e.g., cheating, lying; Merchelbach & Merten, 2012; Polage, 2018; Otgaar et al., 2023), this discomfort would be reduced by engaging in self-deception, leading to a decrease in cognitive dissonance and even a possible increase in positive affect immediately after this.

So far, the distinction between self-deception and cognitive dissonance has not been extensively investigated. Sackeim and Gur (1979) showed that self-deception is associated with an affective discrepancy measured using a physiologic response (galvanic skin conductance). To our knowledge, no other study measured cognitive dissonance in association with self-deception, either as situational or dispositional.

Cognitive Load

Cognitive load refers to the amount of information processed in our working memory at any moment. Interpersonal deception has a higher cognitive load as one has to remember both the truth and the details of their lies (Otgaar & Baker, 2018). It was proposed in the literature (Trivers, 2000; von Hippel & Trivers, 2011) that to reduce the cognitive load caused by deception, self-deception appeared as a byproduct of interpersonal deception with the final goal of deceiving others better. To our knowledge, only one empirical study investigated whether engaging in self-deception would lead to a decreased cognitive load and a more successful deception (Jian et al., 2019). In this study, the forward-looking paradigm was used to induce self-deception. They also included a deception group and used a scale to measure cognitive load (Chinese translated NASA Task Load Index, NASA-TLX; Xiao et al. 2005). Results showed that the cognitive load was statistically significantly higher for the deception group than the self-deception group, which was also compared with the control group (no manipulation, telling the truth), thus providing some initial support for this theory.

(Moral) Self-concept Maintenance

The idea of self-deceiving oneself to preserve one's (positive) moral self-concept maintenance has been extremely influential. Baumeister (1996), one of the first proponents of self-deception being motivated by the maintaining of well-being, argues that people are strongly motivated to "maintain favourable self-concepts of themselves and when these self-concepts are threatened, people sometimes resort to self-deceptive strategies" (i.e., deceiving themselves so they do not have to update their self-concept; Baumeister, 1996; Baumeister & Cairns, 1992; see also Greenwald, 1980, Sedikides and Skowronski, 1997). From this perspective, self-deception is explained as the systematic, motivated avoidance of threatening or unpleasant information about the self, while elaborating and even constructing favourable feedback about the self.

When we try to break down this postulate, a few questions arise: what happens when individuals engage in self-deception as a way to maintain their self-concept (either positive or negative according to self-verification theory, Swann & Buhrmester, 2012)? Are they aware of the fact that they did something (e.g., "I cheated on a test"/"I did not cheat on a test") that is against their view of themselves (e.g., "I am an honest person"/"I am not an honest person")? And do they dismiss the information as not being vital for a bigger category (for example, cheating on a laboratory test would not be a defining characteristic of

being honest, Greve & Wentura, 2010)? This way of understanding the possible process of self-deception for the maintenance of moral self-concept also parallels the minimal criteria set by Gur & Sackeim (1979) of what constitutes self-deception: a) *the individual holds two contradictory beliefs simultaneously*: 1) "a person that cheats is not honest" ("I cheated on a test" is a behaviour, not a belief), 2) "I am an honest person"; b) *the individual is not aware of holding one of the beliefs*: not aware of holding the first belief: "a person who cheats is not an honest person"; c) *the individual's lack of awareness is motivated*: "if I become aware of the fact that I believe that a person who cheats is not honest, I will have to update my view on myself as to correspond with the behaviour I just engaged with"; instead, it is proposed that the person would choose different ways of resolving their inner conflict between the two beliefs such as engaging in cheating behaviour and not using it as a defining feature for their global view of themselves, to a certain extent (Greve & Wentura, 2010). Important to note is a similar construct: moral licensing or self-licensing in which an individual uses a good act ("I donated some money for charity today"), to cover up for something immoral or unethical ("I cheated on a test"). However, in self-concept maintenance and moral licensing, the lack of awareness or the genuine belief in a false belief is not a necessary condition, as it is in self-deception (Khalil & Feltovich, 2018).

Only a few studies tried to test the self-concept maintenance theory in relation to self-deception, by mostly looking at the way people react to receiving correcting information (e.g., feedback). For example, Baumeister & Cairns (1992) looked at *defensiveness* as measured by high social desirability and low anxiety, a measure of individual differences in repression which was seen as self-deceptive (see also Weinberger et al., 1979). They showed that participants high in defensiveness spent less time reading negative feedback about themselves than positive feedback compared with participants low on defensiveness. Moreover, these participants recalled more positive than negative words from the feedback received. Thus, it was concluded that highly socially desirable participants focused more on information that allowed them to keep their positive image of themselves. However, in this study, moral self-concept was not directly measured, nor was self-deception.

In another more recent, but similar study, which measured self-deception more directly, Peterson and colleagues (2003) looked at the behaviour of high or low self-deceivers (self-deception was measured using a validated self-deception scale, Self-Deceptive Enhancement, SDE; Paulhus, 1991). Participants were asked to play a gambling-type card game in which success was dependent on the ability to integrate information regarding task failure. They found that higher

trait self-deceivers choose to continue playing even when losing repeatedly, thus showing evidence of ignoring evidence of error, even when maladaptive (i.e., losing money in a game).

In another study investigating self-reported trait self-deception in association with measured trait moral self-concept, Lu and Chang (2011) showed that dispositional self-deception was associated with a positive moral self-concept in a sample of college students.

Furthermore, while not directly measuring self-deception, but rather overclaiming, which could be confounded by other-deception, Mazar et al. (2008) investigated "the self-concept maintenance" theory in a series of experiments. This theory posits that individuals engage in dishonest acts (cheating on a test) to a limited extent, to gain some benefits (financial incentives), but not enough to update their moral self-concept and include their dishonesty in the update. In one of six experiments, Mazar et al. (2008) gave participants a test and offered half of the participants an opportunity to cheat. Afterwards, participants had to calculate their scores, communicate their final score to the investigators, and fill in a short "personality" questionnaire, which included two questions on morality (being an honest and moral person in contrast with the day before). The results showed that even if aware of overclaiming, participants in the cheating condition did not show evidence of considering their cheating behaviour when answering the two morality questions. The authors concluded that these results support the self-concept maintenance theory, suggesting that limited dishonesty "flies under the radar". This means that individuals do not update their self-concept in terms of honesty even though they might be aware that they overclaimed. However, many of the findings in this study failed to be replicated, and one major critique is that the dependent measure differed between the control condition and the cheating condition. More specifically, for the control condition, the number of correct answers was used as the outcome, while for the cheating condition, participants' self-report of their total score was used, which could explain at least partly the differences found between the two conditions (Verschuere et al., 2018).

Nonetheless, as the method used in this study is similar to the forward-thinking paradigm, one question arises whether people who cheat and integrate their cheating as an indication of their future performance (self-deceivers, thus not directly aware of their overclaiming) might also maintain their self-concept even when they engage in unethical behaviours such as cheating on a test.

Avoiding "Threatening" Information

While protecting oneself from the truth and/or threatening information is an influential motivation proposed by the psychanalytic authors for self-deception, these theories have not been directly addressed in empirical research. To our knowledge, no study looked directly at self-deception and traumatic events.

Researchers tested the hypothesis that self-deception arises or increases as a reaction to threatening information by investigating the reaction of participants to negative (social) feedback (e.g., Baumeister & Cains, 1992; Peterson et al., 2003; Sackeim & Gur, 1979). Initial studies showed that people mostly ignored negative feedback compared to positive feedback, thus avoiding possible threats to their self-view. However, in these studies, it was not measured if this avoidance of negative feedback was related to any motivation, and it could have been more of a general bias against negative feedback. To address this, Von Hippel et al. (2005) devised experiments in which they included what they called an "ego threat" task, measuring the reaction participants have to success and failure feedback. In these experiments, participants first received a task in which they could cheat in a test, which was used to measure rationalised cheating. Afterwards, in two other tasks, participants received both success and failure feedback, and they were later asked which of these tasks measured their important qualities better (the ego threat tasks). If participants rated the task at which they succeeded as more important, it would be explained as self-serving processing of information. The results showed that rationalised cheating was predicted by self-serving processing. However, in one of the experiments, they also measured trait self-deception, and it was not associated with the measure used in these experiments for rationalised cheating. Thus, while rationalised cheating was associated with a positive information processing bias, it was not associated with a measure of self-deception.

In two studies using the forward-thinking paradigm to induce and measure self-deception (Liu et al., 2025 and Mei et al., 2023), when presented with negative feedback, participants engaged in less self-deception (compared with ambiguous and positive feedback). Similarly, Johnson (1995) also showed that when exposed to negative feedback (e.g., failure), self-deception increased when the context was more ambiguous (e.g., an excuse for failure was available). Another study by Sloman et al. (2009) showed that the diagnosticity of the feedback did not matter (positive vs negative), yet self-deception increased when feedback was more vague (containing words which approximated such as "lower/higher than").

While these last findings suggest that self-deception might not be increased or elicited as a reaction to more negative feedback, it does not immediately reject the theory of individuals engaging in self-deception as a reaction to traumatic events. For example, the studies done on health-related information showed that when the diagnosticity would point to a bad diagnosis, participants would engage in more self-deceptive behaviours (e.g., keeping their hands more or less in cold water to align with their preferred diagnosis) (Kunda, 1987, 1990; Quattrone & Tversky, 1984). However, as with the case of the controversy around repression (Otgaar et al., 2019), which has also been defined as a defence mechanism in which information is stored in the unconscious, it could be that the mechanisms in place when traumatic events occur might be better elucidated by alternative science-based explanations such as encoding failure (see Dodier et al., 2024 for a discussion on repression and alternative science-based explanations).

CONCLUDING REMARKS

In this paper, we briefly presented some of the most influential philosophical perspectives on self-deception and the existing psychological theories. Furthermore, we put together an overview of operationalised self-deception in empirical psychology. Our main focus was to present a comprehensive overview of pioneering empirical research on motivations behind self-deception formation, going beyond theoretical speculations on this essentially latent phenomenon.

In psychological research, self-deception has been defined as either a defence mechanism (denial, repression, etc.) or as the inflation of one's self (abilities, traits, potential). Some authors postulate that self-deception has evolved as a byproduct of interpersonal deception, is similar to biases in information processing. Others see it as a type of motivationally-biased judgement. Irrespective of the approach, one common element to most of the theoretical work on self-deception in psychology is the mention of specific motivations which lead to the formation or increase/decrease of this phenomenon. While the question of self-deception being a case of motivated reasoning has been essential for a substantial part of the theoretical psychological literature, to the best of our knowledge, no study has yet provided a synopsis of empirical research addressing this.

The motivations proposed in the literature and covered in this review could be categorised into external and internal motivations. During the past decades, empirical studies were published investigating situational or trait/dispositional self-deception in relation to these motivations. The most consistent motivation

studied so far has been subjective *well-being*. Self-deception, particularly dispositional or trait self-enhancement, appears to have a generally positive association with subjective well-being and personal adjustment. Studies consistently show that individuals with higher levels of self-deception tend to report greater overall positive psychological traits (and negative associations with socially undesirable traits or characteristics such as anxiety or aggression). However, for other motivations such as increased *confidence*, an increase in short-term positive affect, a decrease in cognitive load, and a decrease in negative short-term affective states or discomfort (e.g., cognitive dissonance), only a few studies addressed them sporadically, showing for each proposed motivation some initial support. Future studies should address these latter motivations more methodically to further clarify their role.

Nonetheless, external motivations such as financial incentives, deceiving others, social recognition, and validation were more studied, with initial studies providing empirical support, especially for situational self-deception and in the short term. However, findings so far suggest that in the long-term these effects decrease, thus self-deception could be beneficial in the short-term, but costly in the long term. Future research could also focus on other motivations and long-term benefits or costs.

Another influential theory in self-deception is the motivation of maintaining one's (moral) self-concept. So far, we have found limited research showing that individuals with high self-deception tend to ignore more negative feedback and that dispositional self-deception is associated with measures of trait moral self-concept. Ignoring negative feedback might be more attributed to a systematic information processing bias. The association with moral self-concept could be explained by trait self-deception leading to inflated scores on the moral self-concept measure. Future studies could measure more distinctly the maintenance of the moral self-concept (e.g., before and after a task in which participants can be dishonest) and use paradigms which also measure situational self-deception and are more illustrative for applied settings. For example, in the legal field, false beliefs could have severe consequences such as miscarriages of justice. Thus, it is essential to have a better understanding of the implications different motivations could have on leading to false beliefs in the legal field.

Furthermore, while influential psychoanalytic theories propose self-deception as a protective mechanism against threatening information or trauma (see also work on repression), direct empirical research on this relationship is lacking. So far, some studies have shown that in health-related scenarios, self-deceptive behaviours increased when diagnoses were potentially negative. For example, studies have focused on situations such as receiving negative feedback as a way of measuring an individual's reaction to threatening information.

Despite some initial findings of higher trait self-deceivers ignoring negative feedback, in more recent studies, self-deception was shown to be increased in more ambiguous contexts or when feedback was vague, but not necessarily when this was negative. Future studies should clarify the role of context, ambiguity, and the nature of threatening information in triggering self-deceptive behaviours. Furthermore, a more direct investigation of the relationship between self-deception and traumatic events would bring even more clarity to this postulate.

All in all, while there were consistent results for many of the motivations, some inconsistencies in findings were also present. For example, in the case of self-deception leading to increased confidence, some studies showed increased confidence in situational self-deception immediately after self-deception, but not in the long term, while for trait self-deception, the association was with lower confidence when lying in the short term. These inconsistencies could be attributed to methodological differences, particularly in how self-deception is measured (situational vs. trait) and the specific contexts in which it was studied (e.g., college students, community vs. offenders). Future studies should aim to standardise measurements of self-deception and explore how different motivations influence different types or degrees of self-deception. Including measures of individual differences (e.g., negative personality traits such as Dark Traits) could further clarify these inconsistencies.

The present review represents a first attempt to provide a comprehensive overview of empirical data on motivated false beliefs. One main limitation of this review is that the literature search was not systematically done. For each motivation, multiple relevant databases (PubMed, World of Science, Science Direct, Scopus) were searched using specific keywords (e.g., "cognitive dissonance" AND ("self-deception" OR "self-enhancement"). Future research should focus on a systematic review of the literature on motivations and self-deception to ensure that essential empirical studies have not been missed in the process (such as studies not published in English, e.g., Wei et al., 2024). Additionally, for paradigms such as the forward-thinking paradigm used in multiple recent studies, a preliminary analysis of the effect sizes across them could be attempted.

These limitations notwithstanding, this review has direct implications for theory, methodology, and practice. While providing initial support for self-deception being influenced by various internal and external motivations, this review further emphasises the need for a critical perspective of the validity of the construct, both for situational and dispositional self-deception. Regarding its methodological implications, this review offers an overview of different paradigms and methods used so far in studying self-deception and emphasises the need for conducting studies using similar paradigms for better reproducibility and replicability of the research paradigms and better generalizability of the results.

In conclusion, this narrative review offers a comprehensive overview of the limited available empirical research on internal and external motivations proposed in the literature on self-deception. Our analysis revealed consistent support for subjective well-being as a primary motivation, while also highlighting the roles of external motivations such as financial incentives and social recognition. Although less explored, some limited research exists on additional motivations for self-deception, which could serve as a foundation for future investigations in this field. This construct still faces challenges in methodological consistency and the need for more robust empirical evidence in certain areas. Moving forward, several key directions for future research emerge, including the standardisation of measurement techniques, enhancing ecological validity, and considering interindividual differences. This review contributes to refining theoretical frameworks and informs practical applications in fields such as legal psychology.

Authors' note

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Quality of Life, Risk Behavior, and Digital Engagement

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ABSTRACT. This study examines the relationship between quality of life factors, risk-taking behaviors, and the perceived importance of mobile apps. Regression analysis revealed that quality of life factors explain 10.3% of the variance in risk-taking ($R^2 = 0.103$). Satisfaction with learning was negatively associated with risk-taking ($\beta = -0.56$, $p < .01$), while satisfaction with creativity ($\beta = 0.44$, $p < .05$) and friendships ($\beta = 0.41$, $p < .05$) showed positive associations. A second analysis found that quality of life factors explain 8.8% of the variance in app importance ($R^2 = 0.088$), with satisfaction with learning ($\beta = 0.11$, $p = 0.022$) and love ($\beta = 0.07$, $p = 0.014$) as significant predictors. These findings highlight how life satisfaction influences both risk-taking and digital engagement.

Keywords: Quality of Life, Risk-Taking, Apps importance

INTRODUCTION

Quality of life is a key factor in understanding human behavior, including risk-taking behavior (Dey et al., 2014; de Oliveira Pinheiro et al., 2022). The relationship between these factors is relevant in many areas such as health, finance or the use of technology. Previous research suggests that a low quality of life, characterized by low life satisfaction or poor mental state, may favor risk-taking behaviors as a coping mechanism (Khodarahimi & Fathi, 2016; Valois et al., 2002).

Studies suggest that a high quality of life is associated with reduced engagement in risky behaviors, while young people who use alcohol, tobacco or illicit drugs tend to report lower life satisfaction (Valois et al., 2002).

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Low satisfaction is also correlated not only with substance use, but also with other risky behaviors, such as involvement in physical violence or possession of a weapon (Esposito et al., 2020; Kuntsche et al., 2004; Topolski et el., 2001). On the other hand, a higher quality of life is associated with more prudent and better-valued choices, highlighting the importance of this aspect in understanding the psychology of decision-making. In addition to influencing offline choices and behaviors, life satisfaction also plays a key role in how individuals navigate the digital world. In the digital age, these issues are not only reflected in everyday decisions, but also in users' relationship with technology.

Thus, in the digital age, quality of life and risk-taking behaviors also have a direct impact on how users perceive the importance of digital applications. Applications are no longer just functional tools, but become an extension of user experiences and needs, influenced by psychological and behavioral factors (Atkinson & Castro, 2008; Berceanu et al., 2023; Damant et al., 2017; Triantafyllidis & Tsanas, 2019). Moreover, they have the capacity to support people by providing assistance and have the potential to improve quality of life across multiple dimensions (Elkefi et al., 2023; Zych et al., 2024).

As digital applications have evolved from mere functional tools to platforms integrated into everyday life, users' perception of their importance is strongly influenced by psychological factors (Chan & Honey, 2022; Li & Luximon, 2016). How individuals perceive their own quality of life and their propensity to take risks plays an important role in how they interact with technology and how they choose and use digital applications.

Individuals with a high quality of life can use apps in a balanced way and for a positive purpose in terms of personal evolution or health (Horwood & Anglim, 2019). In this sense, apps have the potential to become a way in which resources are optimized and lifestyle is improved (Chen & Li, 2017; Horwood & Anglim, 2019). However, it should be noted that overuse can have negative effects on well-being (David et al., 2018; Horwood & Anglim, 2019; Rotondi et al., 2017).

As digital applications are increasingly present in everyday life, it is important to understand how quality of life, risk-taking tendencies and the use of technology intersect. While these tools can play a positive role by providing useful support and resources, their effects depend on users' psychological and behavioral factors. Individuals with high levels of life satisfaction tend to use technology in a balanced and beneficial way, while those with lower levels of wellbeing may be more vulnerable to unhealthy uses. This dynamic highlights the need to explore how digital apps can be used to improve lifestyles and reduce the risks associated with overuse.

HYPOTHESES

Understanding the relationship between quality of life factors and risk-taking behaviors is important for predicting decisions in areas like health (Patrick & Erickson, 1993; Zafar et al., 2009), finances (Nofsinger et al., 2018), and technology (Yin et al., 2004).

We expect quality of life to be related to risk-taking behaviors through its influence on decision-making processes. Individuals experiencing lower quality of life, characterized by reduced life satisfaction or poor mental health, are more likely to engage in risk-taking behaviors as a coping mechanism (Khodarahimi & Fathi, 2016). In contrast, higher quality of life is associated with more cautious and deliberate choices (Topolski et al., 2001). This relationship is particularly relevant in understanding the perceived importance of digital applications that support decision-making and well-being.

We also propose that quality of life factors and risk-taking behaviors influence individuals' perceptions of the necessity and usefulness of applications. Prior research has shown that individuals with high self-confidence and a greater tendency for risk-taking are more likely to adopt new technologies and applications (Xu et al., 2016). Consequently, we expect that higher levels of risk-taking may be associated with a greater perceived importance of applications. Based on these, we put forward the following hypotheses:

H1. *There is a relationship between quality of life and risk-taking behaviors*
H2. *Quality of life factors and risk-taking behavior influence the perceived importance of apps for customers.*

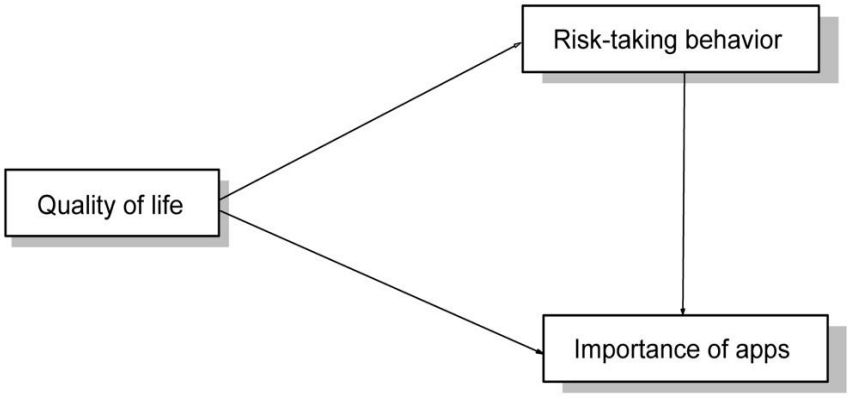

Figure 1. *Research conceptual model*

METHODOLOGY

Procedure

The study employed questionnaires created using Google Forms, with participation being entirely voluntary. Data collection was conducted by distributing the study link via social media platforms, email to targeted respondents, and through snowball sampling. Demographic information, such as gender and age, was recorded. Participants were provided with comprehensive information about the study's purpose, procedures, and instructions, and confidentiality of their responses was guaranteed.

Prior to completing the questionnaires, participants provided written informed consent (Form No. 94/08.12.2021). The finalized dataset was imported into Jamovi version 2.3.28. Descriptive statistics, including means, standard deviations, and percentages, were used to describe the demographic characteristics. Hypotheses were tested using linear regression analysis.

Instruments

Quality of life

In order to assess quality of life, we used QOLI® that measures life satisfaction, positive psychology, and mental health and is widely used in both clinical and nonclinical settings. It evaluates quality of life as the subjective difference between a person's desires and their reality, focusing on need satisfaction, goal achievement, and personal fulfillment. Questions such as "How important is learning for your happiness?" and "How satisfied are you with the learning in your life?", are adapted across various life areas. Validated for the Romanian population via Test Central, the QOLI® has strong internal reliability, with a Cronbach's α of 0.82 (M = 48.82, SD = 7.99).

Risk-taking

To evaluate risk-taking behavior, we utilized the Romanian version of the Risk-Taking Scale (Iliescu, Popa, & Dimache, 2015), a self-report instrument designed to measure individuals' propensity for engaging in risk-taking across various contexts. The scale comprises 10 items, rated on a 5-point Likert scale ranging from "Not at all true for me" to "Completely true for me." Example items include "Take risks" and "Am willing to try anything once." The scale generates a single composite score, with higher scores reflecting a greater inclination

toward risk-taking. Validated for the Romanian population, the scale demonstrates strong psychometric properties. For our sample, Cronbach's alpha was calculated at .82 (M = 2.44, SD = .75), indicating good internal consistency.

Importance of applications for customers

To assess the importance of applications for customers, we utilized a single-item measure: "How important is it for you that a store has online shopping applications?" Participants rated their responses on a 6-point Likert scale ranging from 1 ("Not important at all") to 6 ("Extremely important"). This item was specifically designed to capture the perceived significance of mobile applications in the shopping experience, reflecting the role of technology in consumer purchasing behavior.

Participants

The sample consisted of 331 respondents, all of whom submitted complete and valid responses, achieving a 100% response rate. Data for the study were gathered between March 2022 and December 2022. Participants were recruited through various channels, ensuring a diverse representation of the Romanian population. The sample included individuals from different age groups, genders and educational backgrounds, which helped to capture a broad spectrum of perspectives on digital behavior and consumer preferences.

Of the 331 respondents, a majority were female (82.2%, n = 272), while males accounted for 17.2% (n = 57), and a small proportion identified as “Other” (0.6%, n = 2). The age distribution was relatively balanced, with the largest groups being those aged 21–30 years (35.1%, n = 113) and less than 20 years (33.8%, n = 112). The remaining respondents were distributed across other age categories, with only a small number over 60 years of age (0.3%, n = 1). Regarding educational background, 61.9% (n = 205) of the participants had higher education, while 36.5% (n = 121) had lower education, and a small percentage (0.6%, n = 2) attended specialty courses.

RESULTS

H1. *There is a relationship between quality of life and risk-taking behaviors*

To test this hypothesis, we conducted a linear regression analysis with risk-taking as the dependent variable and quality of life factors as the independent variables. The model yielded an R^2 of 0.103, indicating that approximately 10.3% of the variance in risk-taking behaviors is explained by the quality of life factors included in the analysis. The results revealed significant relationships

between three specific quality of life factors and risk-taking behaviors: satisfaction with learning ($\beta = -0.56$, $p < .01$), satisfaction with creativity ($\beta = 0.44$, $p < .05$), and satisfaction with friends ($\beta = 0.41$, $p < .05$).

Satisfaction with learning demonstrated a negative and statistically significant relationship with risk-taking behaviors, suggesting that individuals who are less satisfied with their learning opportunities are more inclined to engage in risk-taking activities. This may reflect a compensatory mechanism where dissatisfaction in the learning domain leads individuals to seek stimulation or fulfillment in other, potentially riskier pursuits. Conversely, satisfaction with creativity showed a positive and significant association with risk-taking behaviors, indicating that those who feel fulfilled creatively are more likely to take risks, potentially as an expression of openness or exploration. Similarly, satisfaction with friendships was positively linked to risk-taking behaviors, suggesting that robust social relationships may foster a sense of security or encouragement that supports engaging in risk-taking activities. Considering these results, H1 was partially confirmed.

Table 1. *Results of the linear regression analysis for the relationship between quality of life factors and risk-taking*

			95% Confidence Interval			
Predictor	**Estimate**	**SE**	**Lower**	**Upper**	**t**	**p**
HEALTH	0.15	0.22	-0.27	0.57	0.69	0.49
SELF ESTEEM	0.20	0.18	-0.16	0.56	1.09	0.28
PURPOSE	0.40	0.21	-0.00	0.81	1.95	0.05
MONEY	0.01	0.21	-0.40	0.41	0.02	0.98
WORK	-0.05	0.16	-0.36	0.27	-0.28	0.78
PLAY	0.32	0.18	-0.03	0.67	1.82	0.07
LEARN	-0.56	0.21	-0.97	-0.15	-2.70	< .01**
CREATIVITY	0.44	0.19	0.08	0.80	2.39	< .05*
HELP	-0.12	0.18	-0.48	0.24	-0.66	0.51
LOVE	-0.23	0.12	-0.46	0.01	-1.90	0.06
FRIENDS	0.41	0.17	0.07	0.74	2.40	< .05*
KIDS	-0.15	0.13	-0.41	0.10	-1.17	0.24
RELATIVES	-0.05	0.17	-0.38	0.27	-0.33	0.74
HOME	-0.09	0.18	-0.45	0.27	-0.51	0.61
NEIGHBORHOOD	0.19	0.19	-0.18	0.56	1.02	0.31
COMMUNITY	-0.27	0.20	-0.66	0.12	-1.35	0.18

Notes: **p < .01, *p < .05

H2. *Quality of life and risk-taking behavior influence the perceived importance of apps for customers.*

The hypothesis that quality of life factors and risk-taking behavior influence the importance of apps for customers was tested using linear regression. The analysis results show an R^2 of 0.088, indicating that approximately 8.8% of the variance in the perceived importance of apps can be explained by the predictors included in the model. Among the predictors, two quality of life factors were found to have significant relationships with the importance of apps: satisfaction with learning ($\beta = 0.11$, $p < .05$) and satisfaction with love ($\beta = 0.07$, $p < .05$).

Satisfaction with learning showed a positive and statistically significant relationship, suggesting that individuals who are more satisfied with their opportunities for learning perceive shopping apps as more important. This might reflect a tendency among such individuals to value tools that enhance their efficiency or access to information, aligning with their learning-oriented mindset. Similarly, satisfaction with love was positively and significantly associated with app importance. This suggests that individuals who are satisfied with their romantic relationships or affection in their lives may place higher value on apps, potentially due to their focus on convenience and connecting with others. Other predictors, including risk-taking behavior and the remaining quality of life factors, did not show statistically significant relationships with the perceived importance of apps ($p > 0.05$). Based on these findings, H2 was partially supported.

Table 2. *Results of the linear regression analysis for the relationship between quality of life factors, risk-taking and the perceived importance of applications*

			95% Confidence Interval			
Predictor	**Estimate**	**SE**	**Lower**	**Upper**	**t**	**p**
HEALTH	0.04	0.05	-0.05	0.10	0.83	0.41
SELF ESTEEM	-0.05	0.04	-0.12	0.01	-1.11	0.27
PURPOSE	0.02	0.05	-0.07	0.13	0.49	0.63
MONEY	0.01	0.05	-0.08	0.10	0.28	0.78
WORK	-0.03	0.04	-0.11	0.034	-0.97	0.33
PLAY	0.06	0.04	-0.02	0.14	1.54	0.13
LEARN	0.11	0.05	0.02	0.20	2.31	< .05*
CREATIVITY	0.01	0.04	-0.07	0.09	0.24	0.81
HELP	-0.06	0.04	-0.14	0.02	-1.53	0.13

			95% Confidence Interval			
Predictor	**Estimate**	**SE**	**Lower**	**Upper**	**t**	**p**
LOVE	0.07	0.03	0.01	0.12	2.471	<.05*
FRIENDS	-0.07	0.04	-0.10	0.05	-0.69	0.49
KIDS	0.05	0.03	-0.00	0.11	1.82	0.07
RELATIVES	0.02	0.034	-0.05	0.09	0.59	0.55
HOME	-0.08	0.04	-0.16	0.00	-1.92	0.06
NEIGHBORHOOD	-0.01	0.04	-0.10	0.07	-0.32	0.75
COMMUNITY	0.05	0.04	-0.08	0.14	1.19	0.23
RISK	0.01	0.01	-0.02	0.03	0.52	0.60

Notes: *p < .05

DISCUSSIONS

The results of this study provide some empirical evidence on the relationship between quality of life and risk-taking behaviors and their influence on the perceived importance of digital applications. The first hypothesis (H1) was confirmed, such that certain dimensions of quality of life - satisfaction with learning, satisfaction with creativity, and satisfaction with friends - were found to be significantly associated with risk-taking behaviors. Thus, satisfaction with learning had a negative relationship with risk-taking, suggesting that individuals less satisfied with their educational experiences tend to seek stimulation in riskier activities. This result is consistent with previous research on compensatory behaviors, according to which dissatisfaction in one area of life may lead to seeking satisfaction in other areas (Hewett et al., 2017). On the other hand, the positive relationships of creativity and friendships with risk-taking indicate that people who feel creatively or socially fulfilled are more likely to explore new experiences.

Regarding the second hypothesis (H2), the results suggest that quality of life factors have a moderate but significant influence on how individuals perceive the importance of digital applications.

Satisfaction with learning and satisfaction with love were the only significant predictors, indicating that individuals who are fulfilled in these areas are more likely to place greater importance on applications, possibly as tools to improve their personal effectiveness or facilitate their social connections.

From a psychological perspective, these findings are consistent with self-determination theory (Deci & Ryan, 2000), which argues that individuals seek to fulfill their basic psychological needs, such as competence and relatedness. High levels of satisfaction with learning may reflect an intrinsic motivation for personal development, making individuals more likely to use digital tools that support educational or professional advancement. Similarly, satisfaction with romantic relationships could lead to a greater appreciation of technologies that facilitate communication and emotional closeness, thus reinforcing the role of digital applications in maintaining social bonds.

Surprisingly, risk-taking behavior was not a significant predictor, suggesting that real-life risk preferences do not necessarily influence how individuals perceive the usefulness of digital apps. This finding highlights a distinction between offline risk-taking tendencies and attitudes toward technology.

CONCLUSIONS

The study highlights the complex role that quality of life plays in shaping both behavioural tendencies and interactions with the digital environment. The results support the idea that dissatisfaction in certain areas of life may lead to the engagement in risky behaviour, while fulfilment in other areas may lead to the controlled risk exploration. The study also suggests that perceptions of digital applications are more likely to be influenced by general satisfaction with certain aspects of life than by general risk-taking tendencies. These findings contribute to a broader understanding of how subjective well-being interacts with decision-making, both in real life and in the digital environment.

Limitations and Future directions

Future research should explore other psychological and behavioral factors that might mediate or moderate the observed relationships. Longitudinal studies could help establish causality and examine how changes in quality of life influence risk-taking behaviors and interaction with digital apps over time. Also, a differentiated analysis of different types of apps could provide a more detailed insight into how technology is integrated into everyday life. In addition, given the increasing digitalization of everyday experiences, future studies could investigate the impact of app use on quality of life, exploring whether and how technology can become a tool for improving well-being rather than merely reflecting existing psychological states.

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Conflicts of Interest/Competing Interests

The authors declare no conflicts of interest.

Availability of Data and Material

Data are available upon request.

Author Contributions

All authors contributed equally to this study.

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Should I Write or Should I Not? The Investigation of the Short- and Medium-term Effects of an Expressive Writing Intervention in Reducing Depressive Symptoms, Rumination, and Intolerance of Uncertainty in College Students. A Pilot Study

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ABSTRACT. Given the rising mental health concerns in the student population, especially regarding depression and emotion regulation difficulties, cost-effective and accessible interventions are urgently needed.

Thus, the current study investigated the short- and long-term effects of an expressive writing (EW) intervention on subclinical depressive symptoms, rumination, and intolerance of uncertainty on a sample of female Transylvanian Hungarian university students. Participants engaged in a standard EW protocol, writing about distressing experiences for 15–30 minutes over four consecutive days. Outcomes were measured at baseline (T0), immediately post-intervention (T1), and at a six-week follow-up (T2).

Results revealed a significant reduction in depressive symptoms from T0 to T1 and T2, with large and moderate-to-large effect sizes, respectively. While prospective anxiety (IUS-PA) decreased immediately post-intervention, it returned to baseline levels at follow-up. Inhibitory anxiety (IUS-IA) initially increased but decreased significantly by T2. Rumination showed a delayed yet significant reduction from T0 to T2. Cognitive strategies such as self-blame and acceptance improved post-intervention, while behavioral strategies showed mixed results: withdrawal decreased over time, whereas ignoring decreased initially but rebounded by T2.

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These findings suggest EW may be an effective short-term intervention for reducing depressive symptoms and enhancing emotion regulation. However, some benefits diminished over time, highlighting the potential need for reinforcement or complementary interventions.

Keywords: depressive symptoms, rumination, intolerance of uncertainty, expressive writing

INTRODUCTION

The transition from high school to university is a major life shift accompanied by a range of challenges and uncertainties. In order to manage the demands of academic life, students must adequately respond to these pressures. Adjustment to university life refers to the capacity to navigate among academic expectations, managing financial stress, adapting to shared living spaces, and handling the pressure to succeed (Robertson et al., 2020).

A substantial body of epidemiological research shows that, over the first two decades of the 21st century, major depressive disorder (MDD) has become a pressing global health concern, affecting individuals across diverse demographic groups and regions (Vos et al., 2015; Cuijpers et al., 2020). Not surprisingly, in recent years, mental health challenges among young people (particularly college students) have become a growing public health issue, with depression standing out as one of the most urgent (Mercadal, 2021). This trend is also reflected in the rising prevalence of depression among university students (Li et al., 2021). Beneath the surface of academic pursuits and social milestones, many students face a silent struggle shaped by a complex interplay of demographic, environmental, and psychological factors. This unique combination of stressors places college students at increased risk for mental health disorders, especially depressive disorders. In the United States, the National Institute of Mental Health (2023) reports that the prevalence of major depressive disorders (MDD) is 18.6% among individuals aged 18-25 years, with the highest prevalence observed among the female population. Additionally, research by Lee (2023) indicates that depression is more prevalent among women and younger adults (18-34 years) and among adults with lower levels of education. Among the age groups surveyed, young adults, particularly those aged 18-24 years, exhibited the highest prevalence of ever having been diagnosed with depression by a health professional (Lee, 2023). In Eastern Europe, the global prevalence of depressive symptoms during the COVID-19 pandemic was 27% in the general population, while in the student population the prevalence of anxiety and

depression was 31% (Zhang et al., 2022). The implications are profound. Depression among university students has been on a steady rise, severely impacting their academic, social, and emotional functioning. Both in the short- and long- term, students may struggle with fatigue, low motivation, difficulty concentrating, and social withdrawal, all of which in time hinder academic success (APA, 2022). Disrupted sleep, appetite changes, and emotional turmoil further contribute to these challenges (Li et al., 2021). Left unaddressed, depression can lead to long-term consequences such as academic failure, delayed graduation, or dropping out, all of which impact future career prospects. The risk of substance use, persistent mood disorders, strained relationships, and reduced life satisfaction also increases. Alarmingly, untreated depression significantly raises the risk of suicidal ideation and behaviors (APA, 2022).

Research highlights several key contributors to this heightened vulnerability of students to mental ill health. External factors such as adverse childhood experiences (Ngin et al., 2018), inadequate family support (Liu et al., 2021), and family dysfunction (Li et al., 2021) significantly increase the risk of developing depression. On an individual level, traits like neuroticism (Wang et al., 2020), dysfunctional emotion regulation strategies (Wan et al., 2024), psychological distress (Zhang et al., 2020), low self-efficacy (Volken et al., 2021), loneliness (Vanhalst et al., 2012), and especially intolerance of uncertainty (Wan et al., 2024) have all been strongly associated with depressive symptoms in college students. Additionally, demographic factors also play a significant role, with students from ethnic minority backgrounds (Lu et al., 2015) and international students (Liu et al., 2022) facing specific stressors that can further exacerbate mental health challenges.

Given the significant increase in stressors and uncertainty worldwide in recent years, the inability to tolerate ambiguous life conditions (Moscone, Tosetti, & Vittadini, 2016; Tavares, 2017), known as **intolerance of uncertainty** (IU) has attracted growing attention as a key cognitive vulnerability linked to depression and rumination. IU, defined as a tendency to perceive uncertain situations as threatening, which negatively shapes emotional, behavioral, and cognitive responses (Dugas et al., 2004) has been identified as a significant risk factor for both the development of mental health issues and the likelihood of school dropout among college students. Recent findings identify IU as a transdiagnostic factor underlying various emotional disorders, including anxiety and depression (Andrews et al., 2023; Carleton et al., 2012; Gu et al., 2020). Its strong positive association with depressive symptoms has been consistently demonstrated in empirical studies (McEvoy et al., 2019; Ruchensky et al., 2020). In a study focused on university students, Zhuo et al. (2021) found that higher levels of IU were significantly related to increased symptoms of depression, anxiety, and insomnia. This study also

revealed that social support can buffer the impact of IU on depressive symptoms, highlighting its moderating role. According to the diathesis-stress model (Colodro-Conde et al., 2018), the interaction between underlying vulnerabilities and external stressors—like uncertainty—can trigger depressive episodes. IU not only amplifies these risks but also reinforces negative thought patterns, particularly when students lack adaptive coping mechanisms (Wan et al., 2024; Zhuo et al., 2021).

Closely tied to IU is the tendency to engage in **rumination**, commonly defined as a repetitive, passive focus on one's negative emotions, their causes, and consequences (Nolen-Hoeksema, 1991; Rusting & Nolen-Hoeksema, 1998). It is widely recognized as a cognitive vulnerability and significant risk factor for mental illness, particularly major depressive disorder (Papageorgiou & Siegle, 2003). Rumination is typically associated with impairments in cognitive functioning and emotional regulation. However, some studies have explored potential benefits of positive rumination (e.g., enhanced problem-solving or cognitive reappraisal) (Cann et al., 2011; Cano-López et al., 2021; Martin & Tesser, 1996). Nolen-Hoeksema's (1991) *Response Styles Theory* suggests that rumination exacerbates and prolongs depressive symptoms by reinforcing negative thought patterns and hindering problem-solving (Nolen-Hoeksema, 2008; Smith & Alloy, 2009). Expanding on this, the metacognitive model of rumination (Papageorgiou & Wells, 2003; Wells, 2019) proposes that beliefs about one's own thinking (metacognitive beliefs) play a central role in the development and persistence of rumination. These beliefs can be both positive (e.g., "*rumination helps me solve problems*") and negative (e.g., "*I can't stop ruminating, and it's harmful*"), and they significantly influence emotional and interpersonal outcomes (Cano-López et al., 2021; Wells et al., 2009). Empirical studies support the notion that individuals who view their rumination as uncontrollable or socially damaging are more likely to experience intensified depressive symptoms (Cano-López et al., 2021; Yang et al., 2020). Chronic rumination may also erode social support, which can further worsen depression (Nolen-Hoeksema & Davis, 1999). In sum, the metacognitive model offers valuable insight into how rumination contributes to depression, both by shaping internal beliefs and by impacting cognitive and social functioning. This framework has practical clinical relevance, informing interventions that aim to reshape maladaptive beliefs about rumination and enhance emotional regulation strategies (Cano-López et al., 2021).

Since depression and anxiety contribute to a growing global public health and economic crisis (Chisholm et al., 2016), supporting the mental health of college students is not only an ethical imperative but also a strategic investment in the well-being of future leaders and the resilience of our societies. The National Institute for Health and Clinical Excellence (NICE, 2002) recommended various psychotherapeutic interventions to support adaptation after severe stress.

Considering the available evidence, both scientific research and clinical practice recommend that cost-effective and easily accessible psychological interventions be implemented to reduce depressive symptoms and enhance mental health among students (Lee et al., 2016; Le et al., 2021). The current gold standard for treating depression is cognitive-behavioral therapy (CBT) (David et al., 2018). In addition to individual and group CBT, most international clinical guidelines (e.g., NICE, 2022) recommend interpersonal psychotherapy, short-term psychodynamic psychotherapy, and other psychosocial interventions such as guided self-help, behavioral activation (individual or group-based), mindfulness, and meditation (National Institute for Health and Care Excellence, 2022).

Despite their proven effectiveness, access to these treatments remains limited due to barriers such as cost, limited availability of trained therapists, stigma, and logistical challenges (Amstadter et al., 2009; Klein et al., 2009; Przeworski & Newman, 2006). These obstacles highlight the need to develop more accessible and cost-effective therapeutic alternatives (L'Abate, 2007). University students often encounter unique difficulties in accessing psychotherapeutic services. Therefore, it is crucial to offer self-help techniques that facilitate cognitive restructuring and empower students to effectively manage and challenge negative thought patterns.

In times of intense emotional turmoil, individuals naturally seek empathy, comfort, and both emotional and practical support. The need to share emotional experiences (extraordinary or everyday events) is a fundamental human inclination, unaffected by education or cultural background (Rimé, 2007). Although recalling emotionally charged memories through expression can temporarily intensify distress, individuals often continue to feel compelled to articulate and share their experiences (Rimé, Herbette, & Corsini, 2004). Research has shown that those who engage in such expression benefit from improved psychological and physiological functioning, enhanced emotional processing, and strengthened social bonds (Pennebaker & Chung, 2007; Rimé, 2007). However, sharing experiences involving shame or morally sensitive content may exacerbate negative emotions and hinder adaptation (Rimé et al., 2004).

This innate drive for emotional expression underpins the development of **Expressive Writing** (**EW**), a method grounded in research that emphasizes the psychological and physiological benefits of verbal emotional disclosure (Pennebaker, 2007; Pennebaker & Chung, 2007).

To mitigate the potential social risks of verbal sharing, Pennebaker and colleagues introduced Expressive Writing as a private and structured alternative. In their seminal study, participants who wrote about their most distressing experiences for 15 minutes over four consecutive days demonstrated improved long-term health outcomes compared to those who wrote about neutral topics (Pennebaker & Beall, 1986). Standard EW procedures typically involve writing about a traumatic or stressful experience for 15–30 minutes per session, over

three to five consecutive days within a two-week period. Participants are encouraged to explore their deepest thoughts and feelings, often disclosing aspects they have not previously shared with others (Frattaroli, 2006; Pennebaker & Beall, 1986). Importantly, this exercise does not require adherence to grammar or spelling norms, which fosters freedom of expression. Numerous studies (Baikie et al., 2012; Cayubit et al., 2021; Daya & Princely, 2016; Gortner et al., 2006; Krpan et al., 2013; Robertson et al., 2020), as well as meta-analyses (Guo et al., 2023; Reinhold et al., 2017; Travagin et al., 2015), have explored the effectiveness of EW in promoting mental health among adolescents and university students.

Several theoretical models have been proposed to explain the psychological mechanisms underlying the effectiveness of EW. Among the most prominent are the ***emotional inhibition model***, the ***cognitive adaptation model***, and ***exposure theory***.

The ***emotional inhibition model*** (Pennebaker & Beall, 1986) posits that suppressing emotions is cognitively demanding and contributes to chronic stress, ultimately impairing both physical and mental health. According to this view, EW offers individuals the opportunity to release these suppressed emotions, thus reducing stress and improving well-being (Pennebaker, 1990).

The ***cognitive adaptation model***, also known as the cognitive processing model, is rooted in cognitive psychology and explains how individuals incorporate distressing experiences into their broader self-concept and worldview (Boals & Klein, 2005; Sloan & Marx, 2004). When life events challenge a person's core beliefs or schemas, psychological adaptation requires reconciling this mismatch. Expressive writing supports this by enabling the creation of a coherent narrative, which promotes understanding, integration, and ultimately psychological adjustment. Boals and Klein (2005) suggest that changes in how individuals describe their experiences reflect a cognitive shift in the way the event is understood.

Exposure theory builds on elements of both emotional and cognitive processing. It views EW as a form of imaginary exposure that can activate key mechanisms such as habituation, extinction, and emotional processing (Foa et al., 2007; LeDoux, 2015; Moscovitch et al., 2008). In this framework, writing about a traumatic event helps break the association between trauma-related triggers and the intense emotional responses they provoke (Rose, 2019). This is achieved through *stimulus-related habituation* (repeated exposure to the traumatic content itself) and *response-related habituation* (exposure to the emotional and physiological reactions the trauma elicits) (Lepore et al., 2002). For habituation to be effective, the writing must fully engage with the original traumatic memory (Moscovitch et al., 2009).

Together, these three models offer a comprehensive understanding of how expressive writing may promote healing: by reducing emotional inhibition, facilitating cognitive restructuring, and desensitizing traumatic responses

through exposure. Although the exact mechanisms remain subject to ongoing investigation, these frameworks align closely with those used to explain other evidence-based interventions, such as trauma-focused cognitive behavioral therapy (TF-CBT) (Cohen et al., 2000) and exposure-based cognitive therapy for depression (Hayes et al., 2007).

Briefly put, EW is considered a cost-effective psychotherapeutic technique that facilitates internal dialogue and self-reflection (Wong et al., 2021). It offers a safe space for introspection and emotional release without fear of judgment. Additionally, this method engages intrinsic psychological resources such as imagination and creativity, supporting the integration of emotional and cognitive aspects of experience (Wong et al., 2021).

Overall, research indicates that expressive writing (EW) may serve as an effective intervention for promoting mental health among young people (Cayubit et al., 2021; Baikie et al., 2012). Several meta-analyses report modest but meaningful improvements in general well-being (Travagin et al., 2015; Guo et al., 2023). However, findings related to its effect on depressive symptoms remain inconsistent. While Reinhold et al. (2017) argue that EW should not be viewed as a stand-alone treatment for depression, other studies have found moderate yet significant reductions in depression, anxiety, and stress (Guo, 2023). Despite these mixed results, evidence suggests that EW can help reduce depressive symptoms and rumination among college students, both in the short and long term (Gortner et al., 2006; Niles et al., 2014).

OBJECTIVES

The major aim of the present study was to investigate the potential benefits of an expressive writing intervention in reducing subclinical depressive symptoms, rumination, and intolerance of uncertainty among female Transylvanian Hungarian students. A second objective was to evaluate the short-term (immediately after the fourth day of the intervention) and long-term (six weeks post-intervention) efficacy of expressive writing on depressive symptoms, rumination, and intolerance of uncertainty among students. The third objective was to investigate possible changes in the use of conscious and behavioral emotion-regulation strategies pre- and post-intervention.

HYPOTHESES

H1. We expect that participants engaged in the EW intervention will show a significant reduction in subclinical depressive symptoms, and intolerance of uncertainty at post-intervention measures (T1) compared to baseline measures (T0).

H2. We expect that the effects of the EW intervention on depressive symptoms and intolerance of uncertainty will be improved or maintained at the six weeks post-intervention (T1 to T2) as well.

H3. We expect that participants engaged in the expressive writing (EW) intervention will show a significant increase in the use of adaptive, and a decrease in the use of maladaptive emotion- and behavior-regulation strategies, as measured by the CERQ and BERQ, from T0 to T1 and T2. Regarding Ruminative Response, we expect significant increase in Reflective Rumination and decrease in Brooding, from T0 to T1 to T2.

STUDY

Participants

Given that previous research suggests female students tend to adapt more slowly to academic life and report higher levels of depressive symptoms than their male counterparts, the present study focused on a sample of 15 female students aged 19 to 21 (M = 19.60, SD = 0.828) from the Faculty of Psychology in Romania. Among the participants, 33% were single and 64% were in a relationship. Additionally, 34% resided in urban areas and 66% in rural areas of Transylvania. Regarding financial satisfaction, 60% of the participants reported being content or very content with their financial status.

Instruments

The questionnaire began with an information section outlining the purpose and details of the study, followed by items assessing the participants' sociodemographic characteristics. Data were collected on participants' age, gender, educational level, academic or professional background, financial status, marital status, place of work (if applicable), year of study, and field of specialization.

Depressive symptoms were measured using the 21-item Beck Depression Inventory (BDI-21; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI-21 is a self-report multiple-choice questionnaire developed to assess the severity of depressive symptoms in adolescents and adults. Each item targets a specific symptom or attitude associated with depression, covering somatic, cognitive, and behavioural dimensions. Scores range from 0 to 63, with higher scores indicating greater severity of depressive symptoms. According to established guidelines, scores of 0–9 indicate minimal depression, 10–19 mild to moderate depression, 20–29 moderate to severe depression, and 30 or above signify severe

depression. The BDI has consistently demonstrated strong internal consistency (typically > .90); in the present study, the scale exhibited good internal consistency (Cronbach's α = .83).

Intolerance of uncertainty was measured using the 12-item version of the Intolerance of Uncertainty Scale (IUS-12; Carleton, Norton, & Asmundson, 2007), which was translated and adapted for the Hungarian population by Zsidó et al. (2021). The IUS-12 yields a total score, as well as scores for two subscales: **Prospective Anxiety** (reflecting fear and concern about future events) and **Inhibitory Anxiety** (reflecting behavioural inhibition in uncertain situations), higher scores indicating higher levels of intolerance of uncertainty. Participants rated each item on a five-point Likert scale, ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). In the current study, the scale demonstrated good internal consistency, with a Cronbach's alpha of .88 for the total score, .78 for the Prospective Anxiety subscale, and .71 for the Inhibitory Anxiety subscale.

Rumination was assessed using the 10-item version of the Rumination Response Scale (RRS; Nolen-Hoeksema et al., 1999; Treynor et al., 2003), which focuses on two subcomponents of rumination: Brooding and Reflection. This version was developed to exclude items overlapping with depressive symptomatology and was translated into Hungarian as part of the NewMood study (Lazáry et al., 2011). Participants responded to each item on a four-point Likert scale ranging from 1 (never) to 4 (always), indicating how often they engage in specific thought patterns when feeling sad or down. The Brooding subscale captures passive and judgmental self-focused thinking, while the Reflection subscale reflects purposeful self-examination aimed at understanding one's mood. The scale contains no reverse-coded items. In the current study, internal consistency was acceptable, with Cronbach's α = .71 for the Brooding subscale, and α = .73 for the Reflection subscale.

Conscious cognitive emotion regulation strategies were assessed with the 36-item Cognitive Emotion Regulation Questionnaire (CERQ) (Garnefski et al., 2002). The CERQ is a multidimensional self-report instrument designed to assess the cognitive strategies individuals use to manage negative emotions following adverse or stressful events. The CERQ scale was also adapted for the Hungarian population by Miklósi et al. (2011). Each item of the CERQ is rated on a five-point Likert scale ranging from 1 (almost never) to 5 (almost always), measuring the frequency with which individuals engage in specific cognitive strategies to regulate their emotional responses. The scale captures nine distinct subscales (self-blame, acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, catastrophizing, and other-blame), which can be comprised in adaptive (e.g., positive reappraisal,

acceptance) and mal-adaptive (e.g., rumination, catastrophizing) strategies. The Hungarian version of the CERQ demonstrated good internal consistency in this sample (Cronbach's α = .77) and the subscales demonstrated good internal consistency sample (Cronbach's α = .73 to .83)

Behavioral emotion regulation was assessed using the 20-item Behavioral Emotion Regulation Questionnaire (BERQ; Kraaij & Garnefski, 2019), translated into Hungarian by the authors in 2021. The BERQ measures five distinct behavioral strategies used in response to negative emotions: seeking distraction, withdrawal, active approach, seeking social support, and ignoring, each represented by four items. Participants rated the frequency of their use of each strategy on a five-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). In the original validation study, the subscales demonstrated high internal consistency (Cronbach's α = .86–.93). In the current student sample, internal consistency ranged from α = .71 to .78 across subscales.

Research design

The present study employed a single-group, repeated-measures experimental design to examine the effects of classic expressive writing (EW) on various psychological outcomes. The design included one experimental group, which received the intervention, and three measurement time points: pretest (baseline), posttest (immediately after the intervention), and follow-up (six weeks after the posttest).

The dependent variables assessed at all three time points were: depressive symptoms (BDI), cognitive emotion regulation strategies (CERQ), behavioral emotion regulation strategies (BERQ), intolerance of uncertainty (IUS-12), and ruminative response (RRS).

Considering the initial relatively small number of participants and the high levels of participant attrition specific to the EW procedure, we decided not to include a control group; instead, participants served as their own controls, with pretest scores providing a baseline for comparison.

Procedure

Ethical Considerations and Participant Selection

The protocol of the present study was approved by the Ethics Committee of the Babes-Bolyai University, Cluj-Napoca, Romania [Research Ethics Approval No. 15.939/08.11.2023). Participants were selected through a multi-stage process.

Initial Assessment and Pretest

The present study which begun in November 2023 and ended in January 2024, aimed to involve individuals exhibiting subclinical depressive symptoms, as determined by the Beck Depression Inventory (BDI), with scores ranging between 9 and 29. Initially, a Google Form containing all questionnaires was distributed to 250 Hungarian students enrolled to Babes-Bolyai University, Cluj-Napoca, Romania. Those who met the eligibility criteria based on their responses were contacted via email and invited to attend a face-to-face group meeting.

Following this, BDI scores were computed, and 50 students meeting the subclinical depression criteria were invited to participate in the intervention. These students were assigned to an experimental group of expressive writing. Of the 50 students agreeing to participate in the study only 29 participated at the first writing session, and the ***participant attrition*** grew with each day of intervention [a frequent challenge in EW studies, often due to the emotional intensity of writing about distressing experiences and the multi-day commitment involved (Baikie & Wilhelm, 2005; Smyth & Pennebaker, 2008)]. On the first day of the intervention, all participants were asked to respond to the complete set of pretest questionnaires, measuring all demographic and dependent variables (depressive symptoms, cognitive and behavioral emotion regulation strategies, intolerance of uncertainty, and ruminative response).

Experimental Procedure

The expressive writing interventions were conducted over four consecutive days, each intervention lasting 20 minutes, following the guidelines outlined by Pennebaker and Chung (2007). Before the writing sessions, participants received standardized instructions in Hungarian, as follows:

> "*For the next four days, I would like you to write about your most profound thoughts and feelings regarding any challenging or emotionally distressing events you are currently experiencing. Additionally, you may connect your topic to any past stressful or traumatic experiences you have had. In your writing, it is my expectation that you will allow yourself to fully express your most profound emotions and thoughts. The topic may be linked to your relationships with others, including parents, partners, friends, or relatives. Additionally, you may choose to link your experience to their past, present, or future or to their identity as it has been, as you would like it to be, or as it currently is. You may choose to address the same general issues or experiences on each day of writing or, alternatively, to focus on different experiences each day. It is not necessary to concern yourself with grammatical or spelling errors, as these are of no consequence. All of the information provided will be kept strictly confidential."*

Posttest and Follow-Up

On the final day of the intervention, all participants completed a posttest questionnaire identical to the pretest. Six weeks later, a follow-up assessment was conducted using the same questionnaire package.

RESULTS

Data were analyzed using IBM SPSS Statistics (Version 26) (IBM Corp, 2019). Descriptive statistics are presented first to summarize the characteristics of the sample (see Table 1).

Table 1. *Descriptive statistics*

Scale	Mean	SD	Min	Max
T0-BDI-TOT	18.93	4.46	11	26
T1-BDI-TOT	13.33	6.33	7	26
T2-BDI-TOT	14.33	6.17	6	25
T0-IUS-Prospective-Anxiety	24.73	4.83	16	32
T1-IUS-Prospective-Anxiety	17.20	4.69	8	23
T2-IUS-Prospective-Anxiety	23.26	5.96	13	31
T0- IUS-Inhibitory-Anxiety	18.26	3.75	10	24
T1-IUS-Inhibitory-Anxiety	22.66	4.54	16	32
T2-IUS-Inhibitory-Anxiety	17.73	4.77	8	24
T0-CERQ-Self-Blame	14.40	2.13	11	18
T1-CERQ-Self-Blame	13.20	2.27	10	18
T2-CERQ-Self-Blame	13.33	2.49	9	17
T0-CERQ-Acceptance	14.46	2.35	9	18
T1-CERQ-Acceptance	13.33	2.02	10	16
T2-CERQ-Acceptance	13.66	1.91	10	17
T0-CERQ-Rumination	17.06	2.12	13	20
T1-CERQ-Rumination	16.53	2.92	12	20
T2-CERQ-Rumination	15.20	2.78	9	20
T0-CERQ-Positive-Refocusing	9.13	3.87	4	17
T1-CERQ-Positive-Refocusing	11.06	3.73	5	17
T2-CERQ-Positive-Refocusing	9.53	3.56	4	16
T0-CERQ-Refocus-on-Planning	14.80	2.51	10	18
T1-CERQ-Refocus-on-Planning	14.66	2.87	10	20
T2-CERQ-Refocus-on-Planning	14.06	3.30	10	19
T0-CERQ-Positive-Reappraisal	12.13	3.41	6	19
T1-CERQ-Positive-Reappraisal	12.53	3.22	7	19
T2-CERQ-Positive-Reappraisal	12.33	2.71	8	18
T0-CERQ-Putting-into-Perspective	12.46	2.87	8	17

Scale	Mean	SD	Min	Max
T1-CERQ-Putting-into-Perspective	13.06	2.49	7	16
T2-CERQ-Putting-into-Perspective	12.40	2.94	5	16
T0-CERQ-Catastrophizing	10.06	2.84	4	13
T1-CERQ-Catastrophizing	9.40	2.92	5	15
T2-CERQ-Catastrophizing	9.13	2.35	4	14
T0-CERQ-Other-Blame	8.86	1.92	5	12
T1-CERQ-Other-Blame	9.60	2.84	6	17
T2-CERQ-Other-Blame	8.93	3.45	5	16
T0-BERQ-Seeking-Distractions	13.13	2.35	10	18
T1-BERQ-Seeking-Distractions	13.26	2.93	7	17
T2-BERQ-Seeking-Distractions	13.00	2.61	9	19
T0-BERQ-Withdrawal	13.80	3.60	8	19
T1-BERQ-Withdrawal	14.33	4.27	6	20
T2-BERQ-Withdrawal	12.73	3.97	4	18
T0-BERQ-Actively-Approaching	13.00	2.87	8	17
T1-BERQ-Actively-Approaching	13.26	2.37	10	17
T2-BERQ-Actively-Approaching	12.33	2.22	9	16
T0-BERQ-Seeking-Social-Support	15.80	2.78	10	20
T1-BERQ-Seeking-Social-Support	15.93	3.30	9	19
T2-BERQ-Seeking-Social-Support	16.00	3.42	9	20
T0-BERQ-Ignoring	8.80	3.36	4	15
T1-BERQ-Ignoring	6.53	2.58	3	12
T2-BERQ-Ignoring	9.26	3.78	4	14
T0-RRS-Brooding	13.73	3.21	8	20
T1-RRS-Brooding	14.33	2.46	11	20
T2-RRS-Brooding	13.73	3.23	9	19
T0-RRS-Reflection	12.80	1.97	10	17
T1-RRS-Reflection	13.40	2.50	9	17
T2-RRS-Reflection	13.40	2.06	10	18

Note:
N=15
BDI= Beck Depression Inventory, IUS-12=Intolerance of Uncertainty,
CERQ=Conscious Cognitive Emotion Regulation Questionnaire,
BERQ=Behavior Emotion Regulation Questionnaire, RRS= Rumination Response Scale

Next, we intended to investigate possible differences in the assessed dependent variables (depressive symptoms, intolerance of uncertainty, cognitive and behavior emotion regulation strategies, ruminative response) from pre-test (T0) to four-day (T1) and six-week (T2) post-intervention scores. Since the number of participants who completed all four days of intervention and participated at the six-week post-intervention assessment was low (N=15), we

conducted repeated measures nonparametric t-tests. Effect sizes were calculated based on the following formula: **$r = (Z/\sqrt{N})$.** Results are presented in Table 2. Significant changes are also presented graphically in Figure 1.

Table 2. *Non-Parametric Repeated Measures Test Results for depressive symptoms, conscious cognitive and behavior emotion regulation, ruminative response and intolerance of uncertainty from T0 to T1 and T2 time points.*

T0-T1-T2	**Z**	**sign**	**Effect size (*r*)**
T0-T1-BDI-Total	**-2.59**	**.010**	**-.67**
T0-T2-BDI-Total	**-2.23**	**.026**	**-.57**
T1-T2-BDI-Total	-.68	*p* > .05	
T0-T1-IUS-Prospective-Anxiety	**-3.27**	**.001**	**-.84**
T0-T2-IUS-Prospective-Anxiety	-.57	p > .05	
T1-T2-IUS-Prospective-Anxiety	**-2.67**	**.008**	**-.69**
T0-T1- IUS-Inhibitory-Anxiety	**-2.95**	**.003**	**-.76**
T0-T2-IUS-Inhibitory-Anxiety	-.59	p > .05	
T1-T2-IUS-Inhibitory-Anxiety	**-2.70**	**.007**	**-.51**
T0-T1-CERQ-Self-Blame	**-2.04**	**.041**	**-.53**
T0-T2-CERQ-Self-Blame	-1.62	*p* > .05	
T1-T2-CERQ-Self-Blame	-.22	*p* > .05	
T0-T1-CERQ-Acceptance	**-2.10**	**.036**	**-.54**
T0-T2-CERQ-Acceptance	-1.81	*p* > .05	
T1-T2-CERQ-Acceptance	-.08	*p* > .05	
T0-T1-CERQ-Rumination	-1.28	*p* > .05	
T0-T2-CERQ-Rumination	**-2.46**	**.014**	**-.63**
T1-T2-CERQ-Rumination	**-2.27**	**.023**	**-.58**
T0-T1-CERQ-Positive-Refocusing	-1.83	*p* > .05	
T0-T2-CERQ-Positive-Refocusing	-.11	*p* > .05	
T1-T2-CERQ-Positive-Refocusing	-1.51	*p* > .05	
T0-T1-CERQ-Refocus-on-Planning	-.31	*p* > .05	
T0-T2-CERQ-Refocus-on-Planning	-1.26	*p* > .05	
T1-T2-CERQ-Refocus-on-Planning	-.89	*p* > .05	
T0-T1-CERQ-Positive-Reappraisal	-.56	*p* > .05	
T0-T2-CERQ-Positive-Reappraisal	-.57	*p* > .05	
T1-T2-CERQ-Positive-Reappraisal	-.44	*p* > .05	
T0-T1-CERQ-Putting-into-Perspective	-1.01	*p* > .05	
T0-T2-CERQ-Putting-into-Perspective	-.23	*p* > .05	
T1-T2-CERQ-Putting-into-Perspective	-.85	*p* > .05	
T0-T1-CERQ-Catastrophizing	-1.19	*p* > .05	
T0-T2-CERQ-Catastrophizing	-1.39	*p* > .05	
T1-T2-CERQ-Catastrophizing	-.31	*p* > .05	
T0-T1-CERQ-Other-Blame	-.79	*p* > .05	
T0-T2-CERQ-Other-Blame	-.09	*p* > .05	

T0-T1-T2	Z	sign	Effect size (*r*)
T1-T2-CERQ-Other-Blame	-.54	*p* > .05	
T0-T1-BERQ-Seeking-Distractions	-.36	*p* > .05	
T0-T2-BERQ-Seeking-Distractions	-.57	*p* > .05	
T1-T2-BERQ-Seeking-Distractions	-.70	*p* > .05	
T0-T1-BERQ-Withdrawal	-.84	*p* > .05	
T0-T2-BERQ-Withdrawal	-1.26	*p* > .05	
T1-T2-BERQ-Withdrawal	**-2.10**	**.036**	**-.54**
T0-T1-BERQ-Actively-Approaching	-1.05	*p* > .05	
T0-T2-BERQ-Actively-Approaching	-.98	*p* > .05	
T1-T2-BERQ-Actively-Approaching	-1.23	*p* > .05	
T0-T1-BERQ-Seeking-Social-Support	-.31	*p* > .05	
T0-T2-BERQ-Seeking-Social-Support	-.07	*p* > .05	
T1-T2-BERQ-Seeking-Social-Support	-.05	*p* > .05	
T0-T1-BERQ-Ignoring	**-3.20**	**.001**	**-.82**
T0-T2-BERQ-Ignoring	-.89	*p* > .05	
T1-T2-BERQ-Ignoring	**-3.03**	**.002**	**-.78**
T0-T1-RRS-Brooding	-.71	*p* > .05	
T0-T2-RRS-Brooding	-.36	*p* > .05	
T1-T2-RRS-Brooding	-.58	*p* > .05	
T0-T1-RRS-Reflection	-1.22	*p* > .05	
T0-T2-RRS-Reflection	-1.76	*p* > .05	
T1-T2-RRS-Reflection	-.18	*p* > .05	

Regarding **depressive symptoms** (BDI), the Wilcoxon signed-rank tests indicated a significant reduction in BDI-Total scores from T0 to T1 (Z = -2.59, p = .010), with a large effect size (r = .67). From T0 to T2, the decrease in BDI-Total scores remained significant (Z = -2.23, p = .026), with a moderate-to-large effect size (r = .57). No significant change was found between T1 and T2 (Z = -0.68, p > .05). Investigating the descriptive statistics and graphic representation, one can observe that the most substantial reduction in depressive symptoms occurred between the initial assessment and the first follow-up, with little change observed thereafter.

In case of the **Prospective Anxiety** component of **Intolerance of Uncertainty** (IUS-PA), our results indicate an initial significant decrease in prospective anxiety (IUS-PA) from baseline (T0) to four-day post-intervention (T1) (Z = -3.27, p = .001) with a large effect size (r = .84). However, the difference between baseline (T0) and six-week follow-up (T2) was not statistically significant (Z = -0.57, p > .05). Moreover, a significant increase in prospective anxiety (IUS-PA) was found between four-days post-intervention (T1) and sex-week post-intervention follow-up (T2) (Z = -2.67, p = .008) with a large effects size (r = .69).

Regarding the **Inhibitory Anxiety** component of Intolerance of Uncertainty (IUS-IA)scores significantly increased from baseline (T0) to four-day post-intervention (T1) (Z = -2.95, *p* = .003) with a large effect size (r = .76). A significant decrease in Inhibitory Anxiety (IUS-IA) was observed from post-intervention (T1) to follow-up (T2) (Z = -2.70, p = .007) with a moderate to large effect size (r = .51). No significant difference was found between baseline (T0) and follow-up (T2) (Z = -0.59, p > .05, even if means of T2 compared to T1 are slightly lower. These results suggest that even if the EW intervention initially reduced prospective (IUS-PA) and increased inhibitory anxiety (IUS-IA), with effects in both cases diminishing over time, even if the initial (T0) levels were not attained in either cases.

In the aftermath of EW intervention, our results indicate the following significant changes in conscious cognitive and behavior emotion regulation strategies. **Self-blame** (CERQ) decreased significantly from T0 to T1 (Z = -2.048, *p* = .041) with a moderate effect size (r = -.53). At T2, scores increased slightly compared to T1, nevertheless non-significantly.

Acceptance of the confronted stressful events also presented a decreasing pattern from T0 to T1 (Z = -2.10, *p* = .036) with a moderate effect size (r = -.54). Scores slightly, though non-significantly increased from T1 to T2.

The conscious cognitive emotion regulation strategy of **rumination** presented a non-significant decrease from T0 to T1, followed by significant decrease from T0 to T2 (Z = -2.46, *p* = .014) with a large effect size (r =- .63), and from T1 to T2 (Z = -2.27, *p* = .023) with a medium to large effect size (r = 0.58).

In the case of behavior emotion regulation strategies, the applied EW intervention produced significant changes in two major strategies. **Withdrawal** has initially non-significantly increased from T0 to T1, but then significantly decreased from T1 to T2 (Z = -2.10, *p* = .036) with a moderate effect size (r =- .54) to a level lower compared to T0 (though non-significant).

Ignoring has significantly decreased from T0 to T1 (Z = -3.20, *p* = .001) with a large effect size (r =-.82), and significantly increased at the six-week follow-up to a level higher than that measured at baseline (T0) (Z = -3.03, *p* = .002) with a large effect size (r =-.78).

Interestingly, our results presented no statistically significant changes in the two components of the Rumination Response Scale (RRS), namely brooding and reflection. This may be due either to the low number of participants, the lack of a second, e.g., six-month follow-up, or slightly problematic psychometric properties of the scale on the investigated population (Cronbach alphas around .70). These aspects should be addressed in future studies.

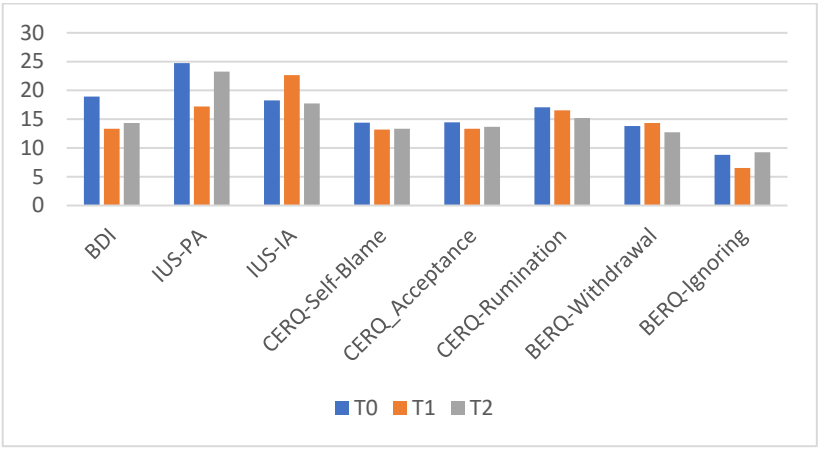

Figure 1. *Changes in scores of depressive symptoms, CERQ-Rumination, BERQ-Ignoring, and Intolerance of Uncertainty (Prospective Anxiety and Inhibitory Anxiety) from T0 to T1 to T2*

CONCLUSIONS AND DISCUSSIONS

In recent decades, rapid life changes—both positive and negative—have significantly impacted individuals' psychological functioning. Technological advancements have greatly enhanced quality of life, yet they have also introduced a host of unprecedented challenges and pressures (Cuijpers et al., 2020; Vos et al., 2015). As a result, the number of individuals experiencing various mental health difficulties has steadily increased (Twenge et al., 2019; WHO, 2023). This trend is particularly evident among young people and university students (Li et al., 2021). Among the most prevalent and concerning psychological issues in this population are rising levels of depressive symptoms and a diminished ability to tolerate uncertainty—both of which have become significant public health concerns (Li et al., 2021; Tavares, 2017; Zhuo et al., 2021). These mental health challenges can have serious short- and long-term personal (e.g., reduced energy, impaired concentration, emotional distress, social isolation, integration issues, poor academic performance), and societal economic consequences. If left unaddressed, they may contribute to increased rates of academic attrition, the worsening of mental health conditions, engagement in risky behaviors, and even long-term impairment in functioning.

Given current evidence, both research and clinical guidelines emphasize the need for cost-effective and accessible interventions to reduce depressive symptoms among students (Lee et al., 2016; Le et al., 2021). While CBT is

considered the golden standard (David et al., 2018), other evidence-based interventions are also recommended (NICE, 2022). Unfortunately, barriers such as high treatment costs and possible stigmatization (perceived and self), may limit students' access to professional assistance (Klein et al., 2009). However, the need for efficient and cost-effective psychological interventions persist (L'Abate, 2007).

The human capacity to share emotionally laden experiences proved to be a very important means that supports psychological, physical, and social well-being (Pennebaker & Chung, 2007). In order to reduce the possible risks of verbal disclosure, Pennebaker proposed a new type of method for processing distressing experiences, namely the Expressive Writing (EW) technique. The standard EW intervention invites participants to writing about stressful or traumatic experiences for 15–30 minutes over three to five consecutive days, encouraging deep emotional disclosure without concern for grammar or spelling (Pennebaker & Beall, 1986; Frattaroli, 2006). A plethora of research indicates that EW has significant mental health benefits, in student populations as well (Guo et al., 2023; Travagin et al., 2015).

The major aim of the present study was to examine the short- and long-term effects of a standard EW intervention on subclinical depressive symptoms, rumination, and intolerance of uncertainty among female Transylvanian Hungarian students. It also explored changes in cognitive and behavioral emotion regulation strategies before and after the intervention.

The key results of this study indicate a significant reduction in depressive symptoms as measured with the BDI. The Wilcoxon signed-rank tests demonstrated a large effect size for the decrease from baseline (T0) to the four-day post-intervention assessment (T1), and a moderate-to-large effect size from T0 to the six-week follow-up (T2). Even if scores increased from T1 to T2, changes were not statistically significant between the last two measurements, indicating that the intervention's impact occurred rapidly and was largely sustained over the follow-up period. This pattern underscores the potential of EW as a brief, low-intensity intervention for alleviating subclinical depressive symptoms, with effects that endure for at least several weeks post-intervention.

The temporal dynamics of Intolerance of Uncertainty subcomponents revealed differential treatment response patterns. Analysis of Prospective Anxiety (IUS-PA), which captures anticipatory distress regarding future uncertainties, demonstrated significant reductions from baseline (T0) to immediate post-intervention (T1) with a large effect size. However, this therapeutic gain was not maintained, as IUS-PA scores significantly increased between T1 and six-week follow-up (T2), returning to approximate baseline levels. These findings suggest that while Expressive Writing may initially facilitate emotional processing mechanisms

that reduce anticipatory anxiety, the intervention's effects on this construct appear transient without additional reinforcement strategies to consolidate therapeutic gains over time.

Conversely, the Inhibitory Anxiety component of Intolerance of Uncertainty (including behavioral avoidance and action paralysis under uncertainty) significantly increased from baseline (T0) to immediate post-intervention (T1). This unexpected finding may reflect heightened internal focus and emotional activation immediately following the EW process, which could temporarily intensify avoidance-related behaviors. Furthermore, IUS-IA scores significantly decreased from T1 to six-weeks post-intervention (T2), returning to levels close to baseline. This pattern indicates that while EW may temporarily destabilize certain anxiety-related processes, these effects are not lasting and may resolve as emotional integration progresses.

Finally, our results indicate significant changes in both Conscious Cognitive and Behavioral Emotion Regulation Strategies. More specifically, the Cognitive emotion regulation strategies of Self-blame and Acceptance indicated a significant decrease from base-line (T0) to immediate post-intervention (T1), with moderate effect sizes, and slight, statistically non-significant increases at the six-week post-intervention assessment (T2), close to base-line values. These results indicate a partial maintenance of the intended therapeutic gains, suggesting that the EW technique may to some degree facilitate the development of adaptive self-evaluative cognitions and enhance the capacity to accept oneself and the stressful situation through collateral mechanisms, as the reconstruction of internal narratives.

Ruminative strategies characterized by repetitive, maladaptive cognitive mechanisms associated with increased vulnerability to depression and anxiety, demonstrated a particularly promising trajectory from baseline to the six-week follow-up. Although the decrease from baseline (T0) to the four-day immediate post-intervention assessment (T1) was not statistically significant, a significant and large reduction was observed between baseline (T0) and the six-week post-intervention assessment (T2), as well as between T1 and T2. These findings suggest a delayed yet substantial effect of EW in reducing ruminative tendencies. These results may indicate that a more complex cognitive restructuring may require more time to stabilize results.

Investigating the changes in behavioral emotion regulation strategies that occurred in the aftermath of the applied EW intervention revealed both immediate and delayed effects. In the case of withdrawal, even if at the four-day immediate post-intervention assessment (T1) scores seemed almost unaffected.

The analysis of behavioral emotion regulation strategies revealed both immediate and delayed effects. Withdrawal, initially unaffected by the intervention, significantly decreased between T1 and the six-week follow-up (T2), with scores falling below baseline levels. These results may suggest that behavioral disengagement may be more resistant to immediate change, nevertheless it may be positively influenced as cognitive and emotional processing changes over time.

In contrast, ignoring, a strategy which is indicative of emotional avoidance, showed a significant and large decrease from baseline (T0) to immediate post-intervention assessment (T1), indicating that EW initially promoted greater emotional engagement. However, this was followed by a significant increase from T1 to the six-week post-intervention follow-up (T2), with levels surpassing those at baseline. These changes may yield a reactivation of avoidant coping once the novelty or structured support of the intervention faded.

Summing up, our results indicate that on the sample investigated, the EW intervention may have an effective short-term effect for reducing depressive symptoms and modifying different emotion regulation strategies. The immediate post-intervention gains, particularly in depressive symptoms, prospective anxiety, and rumination, support the therapeutic potential of structured emotional disclosure. However, the re-activation of certain maladaptive behaviors (e.g., ignoring, prospective anxiety) at follow-up also highlights the potentially unstable, time-sensitive nature of these changes. Importantly, the delayed positive effects observed for rumination and withdrawal suggest that while some psychological processes benefit quickly from EW, others may require time for integration, or possibly need supplementary interventions (e.g., cognitive-behavioral strategies or follow-up sessions) to be sustained.

The results of our study have to be interpreted with caution due to the inherent limitations derived especially from methodological shortcomings. Firstly, the small sample size of our experimental group has limitation on the statistical power to identify subtle effects. A larger sample would offer chances to more robust, generalizable results (Fratarolli, 2006).

Also, the absence of a control group (e.g., no emotion-thought expression intervention) limits the interpretation of the results as being solely attributable to the EW intervention, since changes may to a certain degree be influenced by natural recovery over time, or other variables that occurred during the study period, but remained undetected (e.g., specific life-events).

Moreover, since variables were assessed with self-report measures, the responses may be subject to various biases, as social desirability, distorted recall, etc. The restriction to three assessments (T0-T1-T2) may further limit

the possibility to observe further effects in time of the emotional expression in writing. The processing of the written protocol through a qualitative approach may further offer more nuanced information regarding the individual patterns of change. We propose that these shortcomings be addressed in future investigations based on the EW protocol.

Overall, we may say that on the investigated student population the applied EW intervention proved its promise as a low-cost and minimally invasive intervention. However, there are chances that its benefits may be enhanced through continued engagement, booster sessions, or integration into broader therapeutic programs. Future research should explore such integrative approaches and assess long-term outcomes beyond six weeks to better understand the durability and generalizability of these effects.

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A Structured and Comparative Analysis of Personal Values Theories

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ABSTRACT. The present synthesis of current personal values theories is a way to structure the relevant models and their validation studies, if they have any. The aim of the paper is to identify the stage of validation of these theories. Each one is described, their validation studies for the scales are presented, where applicable and prudent interpretation of differences is made. The present synthesis of current personal values theories is a way to structure the relevant models and their validation studies, if they have any.

The aim of the paper is to identify the stage of validation of these theories. Each one is described, their validation studies for the scales are presented, where applicable and prudent interpretation of differences is made. The review presents the different frameworks used mainly for research and those used for therapy. When it comes to analysing human behaviour, decision-making, and social interaction, having a clear and correct understanding of personal values is completely essential. The purpose is to investigate important theories of personal values, with a particular emphasis on the differences between them.

The research illustrates the main characteristics of these frameworks across a variety of situations by conducting a comparative analysis of these frameworks' comparative analysis. The aim of this review is to evaluate the validity and criticism of these theories by analysing empirical research. We also provide insights into potential future research paths and practical ramifications in the areas of social policy and human development.

Keywords: review, personal values, theory, value theory, identity

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INTRODUCTION

We educate ourselves not only by reading and learning from other great minds, but also by understanding our own mind. As the basis of any sustained lifestyle, personal identity and life decision, the personal values are a specific concept, yet so general in essence, that it can be measured as a cognition. The definitions of the concept will be presented in the literature review part of the article. The behavioral correlation of the personal values can be so diverse, there is not yet a definitive list that could suit any person that holds and appreciates a personal value. There are trends in the preferred systems of values categorization that are used mainly for research and the ones used with priority in therapy. The first documented largely accepted personal value system was the one refined by Rokeach (1973)[1]. Starting from using the personal values in counselling, the concept was accepted by more and more theorists, practitioners and researchers as a possibly valid concept, measurable and useful in understanding human functioning. (Rokeach, 1973)[1].

The underlying factors that guide human behaviour, shape attitudes, and influence decision-making across a variety of life domains are referred to as personal values. In spite of the fact that they are abstract, values function as motivating structures that represent what is significant to individuals. Throughout the history of psychology, several ideas have been created to explain the existence, structure, and influence of personal values on human behaviour. These theories range from early psychological models to modern frameworks that have been experimentally confirmed. The objective of this article is to examine the most important theories of personal values and to assess the significance of these ideas in terms of comprehending human behaviour in a variety of social and cultural settings.

According to Rokeach (1973)[1], personal values may be defined as long-lasting beliefs that some actions or aims are more desirable than others. Rokeach's definition of personal values can be found here. In contrast to attitudes or norms, values are differentiated by the fact that they are deeply ingrained and often serve as guiding principles for the length of an individual's life. This is a unique quality that sets them apart from the other two categories. Although the study of values has its roots in philosophy, it has seen significant growth in the social sciences, notably in the departments of psychology and sociology, where it is becoming more crucial for understanding the dynamics of society as well as the actions of people.

PRESENT RESEARCH

The aim of the present article is to identify, describe and present the degree of validation for personal values theories. These concepts are important in many therapy approaches in psychology and in general, in human psychological functioning understanding. They are also used to evaluate political ideology, predict attitudes and understand motives. Personal values are a factor of forming attitudes and preferences, as well as forming a pattern for deciding for a particular option (Schwartz, 1992)[5].

The theories presented in the article are as follows:

1. Rokeach's Value Theory

One of the earliest systematic theories of human values was presented by Milton Rokeach. In this theory, he differentiated between terminal values, which are desirable end-states such as happiness or freedom, and instrumental values, which are preferred ways of behaving such as honesty or responsibility. According to Rokeach's concept, personal values are the most important factors that determine behaviour, and they are arranged in a hierarchical structure. (Rokeach 1973, Rokeach 1979)[1][2].

His research placed an emphasis on the consistency of values across time, and following research has investigated the ways in which these values differ to varying degrees across different cultures and social groups. On the other hand, Rokeach's theory has been criticised for its inflexible categorisation and limited degree of applicability across cultural fields. (Rokeach, 1973; Rokeach, 1979)[1][2].

Rokeach argued that the total number of values of primary interest to people was relatively limited. Consequently, human values can be arranged into a value system which is "an enduring organization of beliefs concerning preferable modes of conduct or end states of existence along a continuum of relative importance" (Zhao & Lovrich, 1998)[3].

2. Schwartz's Theory of Basic Human Values

Using Rokeach's work as a foundation, Shalom Schwartz established the Theory of Basic Human Values. This theory defines ten universal values that are organised into two dimensions: openness to change versus conservatism, and self-enhancement vs self-transcendence. Achievement, power, security, and charity are only some of the values that are included in this category (Schwartz, 1992)[5].

In addition to being validated in more than 80 countries, Schwartz's model is circular, which can be interpreted as a reflection of the dynamic and sometimes contradictory nature of values. This theory has been particularly influential because of the fact that it is empirically grounded and can be applied across cultures. However, there are opponents who suggest that it oversimplifies the complexity of individual value systems (Schwartz et al., 2012)[6].

The revised model that Schwartz developed is an extension of his earlier work. It incorporates a more comprehensive and nuanced framework, which identifies 19 fundamental human values that are arranged along the same continuum of openness to change, conservation, self-enhancement, and self-transcendence. Through its application, the revised theory is increasingly being utilized in research that spans across cultures and in the study of how values evolve over time (Schwartz et al., 2012)[6].

Regardless of the subject matter, there are certain individuals who have a tendency to assign relatively high or low ratings to all values. Because of this, the observed intercorrelations between values are skewed upward. It is possible to eliminate this prejudice by standardizing the responses of each participant; however, doing so also raises additional issues (Schwartz & Boehnke, 2004)[7].

Using the standardized data, eight freely calculated correlations among the latent components for the ten values provide a rough assessment of the genuine degree of opposition. According to the theory, the correlations between pairs of values that are described as antagonistic ranged from .49 to.81, with a mean of.72. Consequently, the notion of opposition between values that are against one another, which is at the core of the value theory, is supported by these facts (Schwartz & Boehnke, 2004)[7].

It is important to note that before Schwartz's famous 1992 model, he co-authored with Wolfgang Bilsky to propose that all human values can be understood in matters of their value system (1987)[13].

3. Inglehart's World Values Survey

Ronald Inglehart's research of values was motivated by societal changes, namely the transition from materialist to post-materialist ideals as civilizations achieve more economic development. Inglehart maintains that materialist values prioritize economic and physical security, whereas post-materialist values highlight self-expression and quality of life. The World Values Survey monitors these global trends, offering significant insights into the impact of economic development on value systems. Critics contend that Inglehart's dichotomy may fail to encapsulate the complexities of value transformations in less economically developed areas (Inglehart, 1981)[8].

The World Values survey is administered in most of the world countries, it explores the hypothesis that mass belief systems are fluctuating, varying in historical periods with a variety of social, economic, political and ideological consequences. it does not make any assumptions for what causes this change. Data does prove that the relationships values have with politics, culture and economy are reciprocal (Inglehart et al., 2000)[9].

4. Self-Determination Theory (Deci & Ryan, 2000)

Richard Ryan and Edward Deci's **Self-Determination Theory** examines the intrinsic and extrinsic values that drive human motivation. In SDT, intrinsic values (e.g., personal growth, community involvement) lead to higher well-being, while extrinsic values (e.g., wealth, status) are associated with lower life satisfaction. The theory posits that the pursuit of intrinsic goals is essential for psychological health, while extrinsic goals often lead to dissatisfaction. SDT has been widely supported in the context of education, health, and workplace motivation, though it has been critiqued for underestimating the role of external societal pressures on value formation (Deci & Ryan, 2000; Howard, & al., 2020)[12][26].

5. Allport, Vernon, and Lindzey's Value Classification (1960)

Gordon Allport, Philip Vernon, and Gardner Lindzey developed one of the earliest classifications of personal values. They categorized values into six broad types:

- **Theoretical:** Value placed on truth, knowledge, and rationality.
- **Economic:** Focus on utility, practicality, and wealth.
- **Aesthetic:** Appreciation for beauty, form, and harmony.
- **Social:** Concern for love, people, and relationships.
- **Political:** Interest in power, influence, and leadership.
- **Religious:** Value placed on unity, understanding the universe, and spirituality.

The classification was influential in early studies of personality and value systems but has since been overshadowed by more empirically grounded theories like Schwartz's. This early model categorizes personal values into six types: theoretical, economic, aesthetic, social, political, and religious. Each individual tends to prioritize these categories differently, shaping their worldview and behavior. The system is primarily used in personality assessments and vocational guidance (Allport, 1993)[22].

6. Feather's Expectancy-Value Theory (1975)

Norman Feather proposed a theory linking values to decision-making through a combination of expectations and values. According to this theory, the choices people make are determined by the value they place on outcomes and their expectations of success (Feather, 1992)[21].

This theory is widely used in psychology and behavioral economics to explain individual differences in motivation and decision-making, especially in achievement settings like education and career choices. It suggests that individuals' behaviors are driven by the expectation that certain behaviors will lead to desired outcomes and the value they place on those outcomes. People are more likely to engage in behaviors they believe will achieve goals that they value highly. It is being used in educational and organizational settings to predict how personal values influence achievement, motivation, and decision-making (Feather, 1988)[24].

7. Kluckhohn's Value Orientations Theory (1951)

Clyde Kluckhohn developed a framework focusing on how different cultures prioritize values. He proposed that all human groups must address five basic orientations:

- **Human nature orientation:** Views on whether humans are inherently good, evil, or a mix.
- **Man-nature orientation:** How people view their relationship with nature (subjugation, harmony, or mastery).
- **Time orientation:** Emphasis on the past, present, or future.
- **Activity orientation:** Value placed on being (spiritual focus), doing (achievements), or becoming (personal growth).
- **Relational orientation:** Preferred social structures, such as individualism or collectivism.

Kluckhohn's theory has been used in cross-cultural psychology and anthropology to understand how different societies prioritize various values and norms (Hills, 2002)[23].

8. Moral Foundations Theory (Haidt & Graham, 2004)

Jonathan Haidt and his colleagues developed **Moral Foundations Theory (MFT)** to explain the role of values in moral reasoning. They argue that morality is built on five to six core foundations, each reflecting different value orientations:

- **Care/harm:** Concern for others' well-being.
- **Fairness/cheating:** Justice and equality.
- **Loyalty/betrayal:** Allegiance to group and community.
- **Authority/subversion:** Respect for tradition and authority.
- **Sanctity/degradation:** Purity and the avoidance of contamination (physical or moral).
- **Liberty/oppression** (added later): Valuing freedom and resistance to tyranny.

MFT has been influential in understanding political ideology, cultural differences, and social conflicts, with applications in political psychology, ethics, and marketing (Haidt & Joseph, 2004)[16].

9. Bardi and Schwartz's Dynamic Value Systems (2003)

In addition to Schwartz's basic values theory, Bardi and Schwartz proposed a **dynamic** view of values, focusing on how values shift in response to changing circumstances and needs. They suggest that values are fluid and may change as individuals adapt to social or environmental challenges. This theory is particularly useful in explaining how external factors (e.g., economic hardship, social upheaval) can lead to shifts in values over time. It expands on Schwartz's static model by emphasizing the adaptive nature of value systems (Bardi & Schwartz, 2003)[14].

10. Raths, Harmin, and Simon's Value Clarification Theory (1966)

This theory was developed as a practical approach for helping individuals clarify their values through reflection and decision-making. **Value Clarification Theory** focuses on helping people identify, reflect on, and act consistently with their values. The process involves asking individuals to define their values, test them in real-life scenarios, and reflect on their behavior to ensure alignment with their stated values. The model has been widely used in educational settings and counseling to help individuals develop self-awareness and ethical decision-making skills. It is less focused on categorizing values and more on how individuals discover and live by their personal values (Kirschenbaum, Harmin, Howe & Simon, 1977)[15].

Table 1. *Theories main focus points*

Theory	Scales	Conceptualizing the values	Practical applications	Critics
Allport-Vernon-Lindzey Study of Values (1931)	Allport religious scale	Theoretical, Economic, Aesthetic, Political, Religious	understanding ones value system	not comprehensive enought, altough it contains most of the accepted and validated values used in the present research
Kluckhohn's Value Orientations Theory (1951)	no official validated scale	in categories of orientations, for example human orientation, nature, time orientations	understanding ones value system	-
Raths, Harmin, and Simon's Value Clarification Theory (1966)	The main list of values	by using real life scenarios to conceptualize values	understanding ones value system, clarifying the hierarchy of personal values	-
Graves' Spiral Dynamics (1970s)	the guide of all the factors can be used to assess their presence in a person's system	Experience, Experiencing Communion, Existence Accepting, Existence Affiliation, Sociocentricity ,Community, Independence, Scientism, Materialism Security, Sacrifice, Salvation, Survival, Exploitation Power, Assurance, Traditionalism, Safety	assessing motivation of the individual and organization in the work place	-
Rokeach's Value Theory (1973)	Mode Values Inventory (1973), Rokeach Value Survey (1973), Goal and Social Values Inventory (1973)[4]	distinguishing between **terminal values** (desirable end-states, such as happiness or freedom) and **instrumental values** (preferred ways of behaving, like honesty or responsibility). [1][2]	the measures were used multiple times for political preferences [4]	the self-ipsatising nature of the scales [4]

Theory	Scales	Conceptualizing the values	Practical applications	Critics
Hofstede's Cultural Dimensions Theory (1980)	some variations used to test tourist behavior and values	dimensions such as individualism and power distance	cultural values can be measured	none
Inglehart's World Values Survey (1981)	the scales from the globally used World Values Survey	research on values was driven by societal changes, particularly the shift from **materialist** to **post-materialist** values as societies become more economically developed. According to Inglehart, materialist values prioritize economic and physical security, while post-materialist values emphasize self-expression and quality of life	the **World Values Survey,** which is used globally to identify the orientation preferred by local residents the Postmaterialism Index, the self-expression survival, and the secular-traditional measures—obfuscate the complexity of the value space at the individual level	critics argue that Inglehart's dichotomy may not capture the nuances of value shifts in less economically developed regions
Schwartz's Theory of Basic Human Values (1992)	Schwartz values survey, Portrait value questionnaire	identifies ten universal values grouped into two dimensions: **openness to change vs. conservatism** and **self-enhancement vs. self-transcendence**. The values include achievement, power, security, and benevolence, among others	the theory has been particularly influential due to its empirical grounding and cross-cultural applicability, is used in international panel survey, like **European value Survey**	critics argue that it oversimplifies the complexity of individual value systems
Self-Determination Theory (Deci & Ryan, 2000)	different motivation scoring methods, Aspirations Index	types of aspirations	general population	-

Theory	Scales	Conceptualizing the values	Practical applications	Critics
Bardi and Schwartz's Dynamic Value Systems (2003)	no scale	they describe the processes and factors that can change the importance of values, such as social, economic, personal, cultural factors	used to hypothesize the mechanism of value change	some categories may be overlapping
Moral Foundations Theory (Haidt & Graham, 2004)	Foundation Tradeoff Task, Neuroimaging vignettes, Moral Foundations Sacredness Scale, Moral Foundations Questionnaire	Care/harm, Fairness/cheating: Loyalty/betrayal: Authority/subversion: Sanctity/degradation: Liberty/oppression	used for moral integrity and values evaluation	-
Schwartz's Refined Theory of Values (2012)	Schwartz values survey, Portrait value questionnaire	identifies ten universal values grouped into two dimensions: **openness to change vs. conservatism** and **self-enhancement vs. self-transcendence**. The values include achievement, power, security, and benevolence, among others	the theory has been particularly influential due to its empirical grounding and cross-cultural applicability, is used in international panel survey, like **European value Survey**	-

11. Hofstede's Cultural Dimensions Theory (1980)

While primarily a theory of cultural values, Hofstede's model explores how values shape behaviors in different national contexts. The six dimensions (individualism vs. collectivism, power distance, uncertainty avoidance, etc.) reflect broader societal values rather than individual ones. This theory is extensively applied in cross-cultural psychology, business, and global management (Hofstede, 1983; Nickerson, 2023)[19][20].

12. Graves' Spiral Dynamics (1970s)

This describes how personal values evolve in a dynamic process of development. Individuals and societies move through stages, or "value memes," which range from basic survival needs to higher-order concerns like self-actualization and global consciousness (Butters, 2015)[18]. It is used in leadership, organizational development, and societal change initiatives to understand value systems at different stages of human development. The model contains motivational systems, values regarding means of doing actions and values regarding general principles. The use of all types of motivational factors is aimed at understanding the details about a person and their motivation in the workplace (Beck, 2002)[17].

DISCUSSION

The theories that have been proposed by Rokeach, Schwartz, Inglehart, and Deci and Ryan offer significant frameworks for comprehending personal values; nevertheless, these theories differ in the assumptions that they make and the ways in which they are applied. Rokeach's theory places an emphasis on a fixed hierarchy of values, whereas Schwartz's theory places more of an emphasis on a dynamic and cyclical structure. Rokeach's pioneering work laid the foundation for later theories like Schwartz's universal values model and Inglehart's societal values framework.

Inglehart's workplaces values within the framework of social development, whereas SDT places more of an emphasis on the internal as opposed to the external sources of motivation on individuals. The models developed by Schwartz and Inglehart have been particularly prominent in global research due to their

cross-cultural validity. On the other hand, the Social Determinants Theory (SDT) offers insights into the role that values play in psychological well-being.

With its emphasis on the distinction between intrinsic and extrinsic values, the Self-Determination Theory provides a psychological viewpoint on the function of values in the individual's sense of well-being. Although every theory has its own set of advantages and disadvantages, when taken as a whole, they contribute to a more complete understanding of the complexities of personal values.

Theories of personal values have a wide range of applications, notably in the fields of self-understanding, self-development, education, organizational behavior, and social policy. It is possible to better focus treatments in areas such as workplace motivation, mental health, and social governance if one has a greater understanding of the value systems that people and communities hold. For instance, organizations may increase employee happiness by matching job duties with the intrinsic values of their employees. By gaining an awareness of the value orientations of various demographic groups, policymakers may better create efforts that connect with the general public, increasing the likelihood that policies will be accepted and effective.

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The Efficiency of the Worksheet and Practical Applications in the Context of the School Trip

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ABSTRACT. This study highlights the effects of using a worksheet for the analysis of practical applications carried out with students. As part of an interdisciplinary thematic field trip, a tourist route through a historic urban center was followed, and a natural history museum was visited. These activities were preceded by documentation and the creation of a magazine, aimed at identifying and correcting potential gaps, validating prior knowledge to which new information, concepts, or procedures will be related, as well as gathering, selecting, and structuring information for future use. The study involved 43 students aged 16-18, of both genders, from nine classes (10th-12th grades) at "Al. Papiu Ilarian" National College in Târgu-Mureș. To achieve the research objectives, the students participated in a project-based learning activity. They went through several stages, with the current study detailing the practical applications and the completion of the worksheet. The necessity of involving students in practical experiences is emphasized for the development of critical thinking and scientific skills.

Keywords: worksheet, field trip, interdisciplinarity, practical applications, visit, museum

ZUSAMMENFASSUNG. Diese Studie hebt die Auswirkungen der Verwendung eines Arbeitsblattes zur Analyse praktischer Anwendungen hervor, die mit Schülern durchgeführt wurden. Im Rahmen einer interdisziplinären thematischen Exkursion wurde eine Touristenroute durch ein historisches Stadtzentrum

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verfolgt und ein naturhistorisches Museum besucht. Diesen Aktivitäten ging eine Phase der Dokumentation und die Erstellung eines Magazins voraus, mit dem Ziel, mögliche Lücken zu identifizieren und zu beheben, vorhandenes Vorwissen zu überprüfen, an das neue Informationen, Konzepte oder Verfahren angeknüpft werden können, sowie Informationen für die zukünftige Nutzung zu sammeln, auszuwählen und zu strukturieren. An der Studie nahmen 43 Schülerinnen und Schüler im Alter von 16-18 Jahren aus neun Klassen (10. bis 12. Jahrgangsstufe) des "Al. Papiu-Ilarian" Nationalkollegs in Târgu-Mureș teil. Um die Forschungsziele zu erreichen, nahmen die Schüler an einer projektbasierten Lernaktivität teil. Sie durchliefen mehrere Phasen, wobei die aktuelle Studie die praktischen Anwendungen und die Bearbeitung des Arbeitsblatts detailliert beschreibt. Die Notwendigkeit, Schüler in praktische Erfahrungen einzubinden, wird betont, um kritisches Denken und wissenschaftliche Fähigkeiten zu fördern.

Stichwörter: Arbeitsblatt, Exkursion, Interdisziplinarität, praktische Anwendungen, Besuch, Museum

INTRODUCTION

Practical applications represent an effective teaching method through which students learn theoretical concepts and apply them in real-world contexts (Dulamă, 2008a, 2008b; Ilovan, 2007, 2020). Practical applications in urban and museum settings allow students to observe urban infrastructure (Maroşi et al., 2019), museum exhibits, and other significant elements (Conţiu & Conţiu, 2024), while also developing essential skills in analysis, synthesis, and teamwork (Dulamă et al., 2012, 2013). For students and teachers, practical applications pose a challenge to think geographically and are the focus of research at both high school and university levels (Ilovan, 2019; Ilovan et al., 2016, 2018; Conţiu & Conţiu, 2024a).

Through the design, organization, and coordination of practical applications by the teacher, essential conditions are ensured for understanding and deepening geographical knowledge (Mândruț, 2013), for ensuring learning progress (Black et al., 2011), and for students to perceive the complexity of interdisciplinary relationships (Conţiu & Conţiu, 2009). These activities also help in acquiring technical and cognitive skills, along with transversal competences (Dulamă, 2010a, 2010b). During practical applications, students can develop competences in exploring, presenting, and representing urban spaces (Ursu et al., 2019).

The use of the most effective interactive teaching strategies in organizing a learning situation, where the student solves a task (Bocoș et al., 2021), creates favorable conditions for a better understanding of geographical space (Paraschiv,

2007), for establishing the connection between theory and practice, and for thorough learning (Dulamă et al., 2020). Practical experiences help students develop critical thinking and combine theoretical learning with direct field observations (Conţiu & Conţiu, 2023, 2024a). Practical applications provide an authentic learning context and, by supporting environmental knowledge, leads to self-awareness, a key goal in the development of human personality (Conţiu & Conţiu, 2013b). The development of students' personalities occurs through action, confrontation, communication (Albulescu & Albulescu, 1999), active learning, and cooperation (Pop-Păcurar, 2007; Dumulescu et al., 2021).

Regarding students' education and learning content, the importance of active and cooperative learning should be highlighted (Pop-Păcurar et al., 2023), the trend of interdisciplinary organization (Cucoș, 2009), and the need to reconsider the educational role of museums (Conţiu & Conţiu, 2013a). The concept of interdisciplinarity, which emerged as a necessity to overcome the boundaries between different fields and foster integrated education, represents a way of curricular organization focused on methods and attitudes, through a specific interdisciplinary approach that transcends the content area (Ardelean & Mândruț, 2012). The interdisciplinary approach offers several advantages: grounding learning in reality and promoting a global vision, facilitating contextualization, decompartmentalization, and reducing the temptation of integralism in the formation of concepts and representations (Bradu, 2013). However, with excessive use, it poses the risk of gaps, superficiality, and lack of rigor in the cognitive process (Conţiu & Conţiu, 2014a, 2014b).

This research started from the observation that students retain information more easily and learn thoroughly when they engage in non-formal educational activities where they apply and contextualize the knowledge acquired in the classroom (Conţiu, 2009; Conţiu & Conţiu, 2016). The practical applications carried out on a tourist route through a historic urban center, the visit to a natural science museum, and participation in a symphonic concert, as part of a thematic interdisciplinary trip, preceded by research and the creation of a magazine, and followed by the completion of a worksheet, offer the opportunity to establish a connection between theory and practice, as well as to contextualize learning, acquire new knowledge, skills, or abilities, and complement the collection of valuable experiences for personal and professional development.

In the context of this educational approach, practical activities are defined as a set of applied, interactive, and exploratory tasks carried out outside the traditional classroom setting, involving the direct participation of students in observing, analyzing, collecting, and processing real-world information. The worksheet is a key tool designed to stimulate reflection and active learning, helping to organize and apply knowledge through practical activities. School

field trips provide an interdisciplinary framework that facilitates integrated, and applied learning. They have a significant positive impact on the development of students' skills, such as critical thinking, autonomy, collaboration, and problem-solving abilities.

The aim of this study is to investigate the effects of teacher-guided practical applications, direct individual observations, and the completion of a worksheet on students' knowledge and competencies. This includes identifying and correcting potential gaps, validating prior knowledge to which new information, concepts, or procedures will be related, as well as gathering, selecting, and structuring information for future use.

To achieve the aim of the study, two research questions were established:

Q1. What is the effectiveness of the worksheet and practical applications on students' knowledge about urban and museum spaces, in the direct analysis of a historic urban center and a natural history museum?

Q2. What are the effects of direct observation on the elements identified by students in urban and museum spaces?

METHODOLOGY

Participants. This research involved 43 students from 9 classes (10th-12th grades) at "Al. Papiu Ilarian" National College in Târgu-Mureș, aged 16-18, of both genders. Six classes had a scientific profile (specializations: "nature sciences bilingual English", "nature sciences intensive English", "nature sciences", and "mathematics-informatics intensive informatics"), and three had a humanities profile (specializations: "social sciences intensive English" and "social sciences intensive German"). The criteria for selecting the students were: belonging to one of the classes taught by the two authors of the study; membership in the *GeoArt* Club, founded and coordinated by the two authors; and participation in the thematic interdisciplinary trip. The students participating in the project were divided into eight heterogeneous groups in terms of gender, geographic competence level, and class, but homogeneous in age (16-18 years). Based on the participants' free choice, five groups of five students and three groups of six students were formed. These student groups were also involved in the study concerning the preparation for the trip (Conțiu & Conțiu, 2024b).

Procedure. The activities were organized and carried out in November 2024, through a thematic interdisciplinary trip (Vienna, November 7-10), as part of an international educational project, occasioned by the Târgu Mureș State Philharmonic concert at the Wiener Musikverein ("Golden Hall", Vienna) and the partnership agreement with the Iunona Community Development

Association, the event organizer. The project aims to raise students' awareness of European cultural and spiritual values and to involve them as active citizens of the community.

To achieve the research objectives, students participated in a project-based learning activity. The students went through several stages: (1) the documentation and magazine creation stage; (2) the practical applications stage (walking the tourist route through the historic center and visiting the natural history museum); (3) participation in the symphonic concert; (4) the worksheet completion stage. Between October and November 2024, the students completed the documentation and magazine creation stage (*Geographia*, no. 2/2024, Vol. XXII), which then served as a useful guide for the participants (cf. Conţiu & Conţiu, 2024b).

Teaching Activities. This study details the use of the worksheet for analyzing the practical applications carried out with the students in November 2024. This stage consists of three sub-stages.

Sub-stage 1. *Discussing the task, objectives, and requirements with the students*. The students were assigned the task of completing a worksheet based on the practical applications carried out in Vienna (walking the tourist route through the historic center and visiting the natural history museum). Following the practical applications, the students achieved several objectives: identifying gaps and raising awareness of their prior knowledge about the capital of Austria, the Natural History Museum in Vienna (Naturhistorisches Museum Wien), and urban, museum, and cultural spaces in general; observing specific historical, religious, and cultural elements, as well as the museum exhibits, and having each team complete a worksheet related to the research theme; analyzing how these elements are integrated into the urban context and the local community, and developing the ability to correlate field observations with theoretical knowledge.

The task was formulated as follows: Form teams of five or six students. When you walk the tourist route through the historic center and visit the natural history museum, each of you will take notes in a notebook, recording the explanations provided by the teacher and your own impressions. These will be discussed with the other team members at the end of each day's activities and completed. On the bus, on the way back, a representative from each team will present the key elements they remembered and/or noticed. Each team will complete the worksheet (Annex 1) upon returning home. The worksheet will be evaluated by the teachers and by another team chosen by them. Two weeks will be allocated for completing the worksheet. Starting from the second half of November 2024, during geography lessons and a round table (at the first of the weekly GeoArt Club meetings after returning from the trip), each group will

discuss the worksheet with the teacher and other groups, and will explain why they believe students should be involved in such projects and participate in thematic interdisciplinary trips. You will organize a photo exhibition in the Antechamber of the College's Festive Hall, publish articles in the local press, and create a new edition of the *Geographia* magazine (no. 1/2025).

Sub-stage 2. *Forming the groups, conducting practical applications, and group completion of the worksheets*. The students formed five groups of five students and three groups of six students. Each group organized its activity outside of class hours, distributed tasks independently, conducted research, and completed the worksheet after carrying out the practical applications guided by the teachers and returning home.

Sub-stage 3. *Completion, presentation, and evaluation of the worksheets took place* in the first week after returning home (November 11-15, 2024). At the end of the project, each team completes the worksheet according to the instructions provided by the teachers and the field guidance, and discusses it with the other groups as well as with the teacher. Each group evaluates the worksheet of another group (as chosen by the teachers) and engages in discussions with students from the other group.

Instruments. The research data were collected through the worksheet and an evaluation grid for it.

The worksheet (Annex 1) consists of two sections, preceded by identification elements for the groups, the members of the groups, the classes to which the participants belong, and the date. The first section includes five tasks related to *the historic center of Vienna*. The first four structured questions require the completion of short answers related to the names of buildings/ monuments and the year (or century) of construction, architectural details and styles, and the atmosphere of the historic center (sounds, colors, activities). The fifth task asks for a sketch of the route taken through the historic center of Vienna, coordinated by the teachers, and the notation of the main tourist attractions observed, along with the attachment of representative photographs. The second section is related to *the Natural History Museum* (*Naturhistorisches Museum Wien*). It includes three structured questions: the first two are about two exhibits in the museum that caught their attention (name, a brief description, and notable aspects), and one of the sections visited (name, interesting aspects, and the connection to what was learned in class, in biology and geography lessons); the third task involves observing and describing species of animals and fossils.

The evaluation grid for the worksheet (Table 1) includes the completion by the eight teams of the tasks specified in the two sections of the worksheet,

preceded by the general data. The responses of the teams were centralized, along with the examples provided, their number, and their weight.

RESULTS AND DISCUSSIONS

1. Analysis of the completion of tasks in Section A of the worksheet: The Historic Center of Vienna

All students mentioned the group number, the names and surnames of each member, the class or classes they belong to, and the date of completion of the worksheet. Regarding *the Historic Center of Vienna*, the analysis of the answers (Table 1) reflects the following. All teams named *a representative building*: St. Stephen's Cathedral (3 teams; 37.5%), Hofburg Palace (3 teams; 37.5%), and the Vienna City Hall (2 teams; 25%). They also specified the year or century of construction (1137 for St. Stephen's Cathedral; 13th century for Hofburg Palace; 1883 for Vienna City Hall). The students identified architectural styles: Gothic (6 teams; 75%), Baroque (3 teams; 37.5%), Renaissance and Neoclassical (2 teams each; 25%), and Rococo (1 team; 12.5%). Architectural details were identified by 7 teams (87.5%): the monumental façade of the Heldenplatz Gate (Hofburg), the stained-glass roof of St. Stephen's Cathedral, and the clock tower of the City Hall (2 teams each; 25%); the Renaissance façade of the Neue Burg wing, with imposing statues and decorated balconies (1 team; 12.5%). The results show that the students have well-developed observation skills, have made interdisciplinary connections between tourism geography and visual education, and linked what they learned in plastic arts lessons about architectural styles, recognizing the importance of visual-aesthetic education values.

All teams specified a *representative religious building*. Since the requirement did not specify that the representative religious building should not be the same as the representative building mentioned in the previous point, St. Stephen's Cathedral (Dom) was mentioned by the majority of teams (6 teams; 75%), who specified the year construction began (1137), as well as moments from its later evolution (for example, GD completed the information by mentioning its transformation into the Gothic style in the 13th-15th centuries and the completion of the southern tower in 1433). St. Peter's Church (1701-1733) with its fresco-decorated dome, and Karlskirche (18th century) with its elegant and monumental architecture, featuring impressive domes, were specified by one team each (12.5%). The Gothic style (6 teams; 75%) and Baroque style (2 teams; 25%) were mentioned.

Regarding *the monument or statue observed*, the *Plague Column* (*Pestsäule*) was mentioned by 5 teams (62.5%), *the Maria Theresa Monument* by 2 teams (25%), and *the Equestrian Statue of Joseph II* by one team (12.5%).

Elaborate responses to the question "*How would you describe the atmosphere in the historic center of Vienna from the perspective of the sounds you heard*?" were provided by 2 teams (25%): 'It is vibrant and full of life. The predominant sounds are a mix of urban noise and historical harmonies; classical music, coming from in front of cafes or street musicians, complements the elegant and refined atmosphere of the city; the sound of the bells from St. Stephen's Cathedral rings periodically, offering a sacred and ancient air; the atmosphere is one of harmony between tradition and urban dynamism' (GD); 'It is dominated by the sounds of conversations in various languages, blending with the echo of horse hooves on the cobblestone pavement; Christmas carols in multiple languages, played through the audio systems of stores and terraces, add a warm and festive feeling, turning the space into a sonic painting full of charm and tradition' (GF). "Melodious and artistic", and "cheerful, pleasant, and calm" were described by 2 teams each (25%; GE and GA, respectively GG and GH). The atmosphere in the historic center of Vienna was described as "chaotic" in the large boulevards, and "with a variety of sounds that sometimes blend inharmoniously", by one team each (12.5%; GC and GB). The students' responses indicate a good perception of the sounds and noise, and in their presentations, they demonstrate oral communication competence when using literary language.

To the question "*How would you describe the atmosphere in the historic center of Vienna from the perspective of the predominant colors?*", the elaborate responses were provided by the same two teams (25%): "A palette of elegant and sophisticated colors, shades of cream, beige, and white, reflecting a classic and aristocratic air, evoking the imperial splendor of the city; the baroque and gothic facades are often decorated with details of gold and silver, adding a subtle, refined contrast; the roofs are covered with colorful tiles, such as green and yellow, which add a touch of life and energy, while the gardens and parks offer shades of green, providing a pleasant contrast" (GD); "It is subtle and elegant, dominated by warm and white tones emanating from the lighting of the historic buildings; the imposing facades shine in a calm light, creating a sense of intimacy and refinement; a combination of tradition and innovation gives the place a unique charm" (GF). The colors white, green, and red, as well as golden accents, were noted by 2 teams (25%; GE, GG), while the color uniformity, visual harmony "pleasing to the eye", and the "old aura, but not outdated", were remarked by 4 teams (50%; GA, GB, GC, GH). Notably, the use of literary language shows that the students demonstrated high-level linguistic skills and well-developed observation abilities, with good-quality memory and representations, fine perceptions of colors and their effects, attention focused on details, noticing harmonies and contrasts, with the urban landscape having a strong impact on them.

Table 1. *Evaluation Grid for the Worksheet*

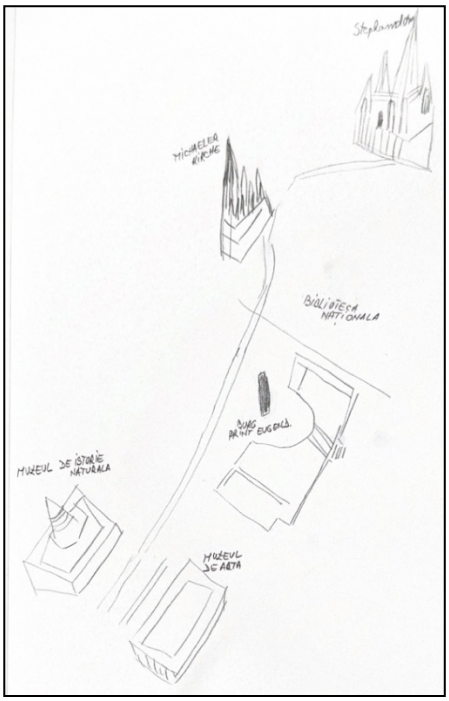
Tasks/ Answers \ *Group*			G^A	G^B	G^C	G^D	G^E	G^F	G^G	G^H	Total	
											Nr.	%
General data	Group number		x	x	x	x	x	x	x	x	**8**	**100**
	Student's first name/last name		x	x	x	x	x	x	x	x	**8**	**100**
	Class/Classes		x	x	x	x	x	x	x	x	**8**	**100**
	Date		x	x	x	x	x	x	x	x	**8**	**100**
Section A. The Historic Center of Vienna	*1. A representative historical building*											
	a. The name of the building	St. Stephen's Cathedral	x	-	-	x	-	-	x	-	**3**	**37.5**
		Hofburg Palace	-	-	-	-	x	x	-	x	**3**	**37.5**
		Vienna City Hall (Rathaus)	-	x	x	-	-	-	-	-	**2**	**25**
	b. The year of construction/ century	1883 (Vienna City Hall/ Rathaus)	-	x	x	-	-	-	-	-	**2**	**25**
		1137 (St. Stephen's Cathedral)	x	-	-	x	-	-	x	-	**3**	**37.5**
		The 13th century (Hofburg Palace)	-	-	-	-	x	x	-	x	**3**	**37.5**
	c. Architectural style	Gothic	x	x	-	x	x	-	x	x	**6**	**75**
		Renaissance	-	-	-	-	x	x	-	-	**2**	**25**
		Baroque	-	-	-	-	x	x	-	x	**3**	**37.5**
		Rococo	-	-	-	-	-	x	-	-	**1**	**12.5**
		Neoclassical	-	-	-	-	x	x	-	-	**2**	**25**
	d. An architectural detail	The monumental façade of Heldenplatz Gate (Hofburg)	-	-	-	-	-	x	-	x	**2**	**25**
		The Renaissance façade of the Neue Burg wing, with imposing statues and ornate balconies	-	-	-	-	x	-	-	-	**1**	**12.5**
		The colored glass roof of St. Stephen's Cathedral	x	-	-	x	-	-	-	-	**2**	**25**
		The clock tower of the City Hall	-	x	x	-	-	-	-	-	**2**	**25**
	2. A representative religious edifice											
	a. The name of the edifice	St. Stephen's Cathedral	-	x	x	x	x	x	-	x	**6**	**75**
		St. Peter's Church	x	-	-	-	-	-	-	-	**1**	**12.5**
		Karlskirke	-	-	-	-	-	-	x	-	**1**	**12.5**
	b. The year of construction/ century	1137 (St. Stephen's Cathedral)	-	x	x	x	x	x	-	x	**6**	**37.5**
		1701-1733 (St. Peter's Church)	x	-	-	-	-	-	-	-	**1**	**12.5**
		Sec. XVIII (Karskirke)	-	-	-	-	-	-	x	-	**1**	**12.5**
	c. Architectural style	Gothic	--	x	x	x	x	x	-	x	**6**	**75**
		Baroque	x	-	-	-	-	-	x	-	**2**	**25**
	d. An impressive detail	The interior columns and distinctive Gothic arches	-	x	-	-	-	-	-	-	**1**	**12.5**
		The South Tower (Südturm; 136 meters tall) and the roof adorned with colorful ceramic tiles	-	-	x	x	x	x	-	x	**5**	**62.5**
		The interior dome decorated with frescoes	x	-	-	-	-	-	-	-	**1**	**12.5**
		Elegant and monumental architecture with impressive domes	-	-	-	-	-	-	x	-	**1**	**12.5**
	3. A notable monument or statue											
	a. Name	I. The Plague Column (Pestsäule)	x	x	-	x	-	x	-	x	**5**	**62.5**
		II. The Maria Theresa Monument	-	-	x	-	x	-	-	-	**2**	**25**
		III. The equestrian statue of Joseph II	-	-	-	-	-	-	x	-	**1**	**12.5**
	b. What does it represent (historically, artistically)	I. A baroque column erected in 1693 as a symbol of gratitude for the end of the plague epidemic of 1679	x	x	-	x	-	x	-	x	**5**	**62.5**
		II. A tribute to Empress Maria Theresa, the monument depicts the empress on a throne, surrounded by advisors and generals	-	-	x	-	x	-	-	-	**2**	**25**
		III. The Habsburg emperor, known for his reforms and promotion of administrative modernization	-	-	-	-	-	-	x	-	**1**	**12.5**
	c. An	I. A statue of the Holy Trinity	x	x	-	x	-	x	-	x	**5**	**62.5**

Tasks/ Answers		*Group*	G^A	G^B	G^C	G^D	G^E	G^F	G^G	G^H	**Total**	
											Nr.	**%**
	interesting detail	(symbolizing divine protection), surrounded by angels and saints										
		II. The bas-reliefs on the pedestal include historical scenes illustrating the reforms and achievements of the era	-	x	-	x	-	-	-	-	**2**	**25**
		III. Joseph II is depicted without a crown, emphasizing his focus on reforms rather than traditional power	-	-	-	-	-	-	x	-	**1**	**12.5**
	4. The atmosphere in the historic center											
	a. Sounds heard	A vibrant, lively, calm, warm, and festive atmosphere; a soundscape full of charm and tradition	-	-	-	x	-	x	-	-	**2**	**25**
		A melodic and artistic atmosphere	x	-	-	-	x	-	-	-	**2**	**25**
		A cheerful, pleasant, and peaceful atmosphere	-	-	-	-	-	-	x	x	**2**	**25**
		A chaotic atmosphere within the wide boulevards	-	-	x	-	-	-	-	-	**1**	**12,5**
		A variety of sounds blending together, sometimes disharmoniously	-	x	-	-	-	-	-	-	**1**	**12,5**
	b. The predominant colors	A palette of elegant and sophisticated colors, with shades of cream, beige, and white, reflecting a classic and aristocratic air, evoking imperial splendor; warm and white tones emitted by the lighting of the historic buildings	-	-	-	x	-	x	-	-	**2**	**25**
		Colors: white, green, and red, along with golden accents	-	-	-	-	x	-	x	-	**2**	**25**
		The chromatic uniformity, the visual harmony "pleasing to the eye," the "old aura, yet not outdated"	x	x	x	-	-	-	-	x	**4**	**37,5**
	5. Sketch of the route through the historic center		x	x	x	x	x	x	x	x	**8**	**100**
Section B. The Natural History Museum (Naturhistorisches Museum Wien)	*1. Two exhibits that caught your attention*											
	a. Name	Ia. The Venus of Willendorf. Ib. The giant rose quartz crystal from the mineral collection	-	-	-	-	x	X	-	x	**3**	**37.5**
		IIa. The Muonionalusta Meteorite. IIb. Tyrannosaurus Rex	x	-	-	X	-	-	-	-	**2**	**25**
		IIIa. The skeleton of an Allosaurus; IIIb. The skeleton of a Diplodocus dinosaur	-	x	x	-	-	-	x	-	**3**	**37.5**
	b. A short description	Ia. A small Paleolithic figurine (around 28,000 - 25,000 BC): a female figure carved from limestone, decorated with red ochre pigments. Ib. unusual dimensions, delicate color, and an almost perfect shape due to geological processes over millions of years	-	-	-	-	x	X	-	x	**3**	**37.5**
		IIa. Discovered in Sweden, it is one of the oldest known objects on Earth, with an estimated age of 4.5 billion years. IIb. It comes from a species of Tyrannosaurus Rex, one of the largest and most feared carnivorous dinosaurs that lived during the Cretaceous period	x	-	-	x	-	-	-	-	**2**	**25**
		IIIa. A land predator with sharp teeth and strong claws. IIIb. A large herbivorous dinosaur (around 150 million years ago), fully reconstructed.	-	x	x	-	-	-	x	-	**3**	**37.5**
	c. What have	Ia. A symbol of fertility, abundance,	-	-	-	-	x	x	-	x	**3**	**37.5**

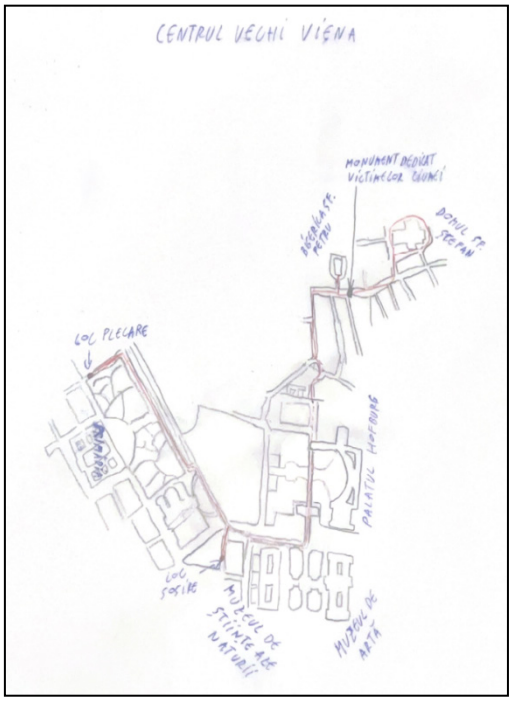
Tasks/ Answers		*Group*	G[A]	G[B]	G[C]	G[D]	G[E]	G[F]	G[G]	G[H]	Total	
											Nr.	%
	you learned from the associated explanations?	used in religious rituals or as a talisman for reproductive success. Ib. Rose quartz forms under specific pressure and temperature conditions in the depths of the Earth's crust										
		IIa. It comes from the solidified core of a celestial body destroyed in the early Solar System, providing valuable information about events that influenced the evolution of Earth (linked to lessons in geology and astronomy). IIb. Hunting behavior, anatomy adapted for speed and strength, and the discovery of its skeletons, which are essential for understanding the evolution of dinosaurs and prehistoric ecosystems	x	-	-	x	-	-	-	-	**2**	**25**
		IIIa. Allosaurus was an agile predator with binocular vision and perfect adaptations to dominate various ecosystems. IIIb. A long and flexible tail used for defense, it fed on rich vegetation, being an example of adaptation to the terrestrial environment during the Jurassic period	-	x	x	-	-	-	x	-	**3**	**37.5**
	2. Choose a visited section and complete it											
	a. The name of the section	I. The Paleontology section	x	-	x	x	-	x	-	x	**5**	**62.5**
		II. The Mineralogy section	-	x	-	-	x	--	x	-	**3**	**37.5**
	b. An interesting element discovered here	I. The complete skeleton of a Diplodocus, a large herbivorous dinosaur from the Jurassic period, and the fossil of a woolly mammoth from the Pleistocene	x	-	x	x	-	x	-	x	**5**	**62.5**
		II. An impressive collection of quartz crystals in various shapes and colors, including dark purple amethyst	-	x	-	-	x	--	x	-	**3**	**37.5**
	c. How do the information discovered/received relate to what you have learned in school?	I. The information about dinosaurs and their evolution is related to the lessons about the evolution of life on Earth and the geological periods studied in school. The interactive exhibition provided a practical perspective on the theoretical concepts learned	x	-	x	x	-	x	-	x	**5**	**62.5**
		II. The information about the formation and structure of minerals is connected to the geography and chemistry lessons studied in school, where students learned about rocks, minerals, and their properties	-	x	-	-	x	--	x	-	**3**	**37.5**
	3. Observe and describe species of animals and fossils											
	a. An interesting animal or a notable fossil	The woolly mammoth (*Mammuthus primigenius*)	-	-	x	x	x	-	x	x	**5**	**62.5**
		A pair of human-like monkeys (Hominidae)	-	x	-	-	-	-	--	-	**1**	**12.5**
		Quetzalcoatlus, a huge pterosaur	x	-	-	-	-	-	-	-	**1**	**12.5**
		Megalodonul, the biggest shark	-	-	-	-	-	x	-	-	**1**	**12.5**
	c. What surprised you about these exhibits?	Details of fossils and models.	x	x	x	x	x	x	x	x	**8**	**100**
		Collection of minerals and rocks	-	x	-	-	-	-	-	-	**1**	**12.5**
		Volcano simulator	-	x	-	-	-	-	-	-	**1**	**12.5**
		The Tissint meteorite	-	-	-	-	-	-	x	-	**1**	**12.5**

x = exist; - missing

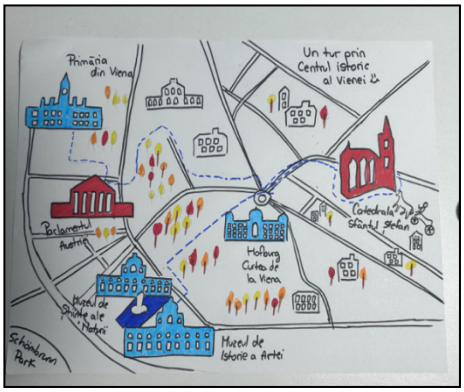
All eight teams created sketches of the route through the historic center of Vienna in the form of mental maps (Fig. 1) and attached their own photographs. Mental maps are cognitive representations that differ from maps created by cartographers in that they do not involve mathematical calculations, are more schematic, and are acquired through a slower, incomplete, and often confusing encoding process (Miclea, 1999). The term "cognitive map" also appears in the literature, essentially defined as a network of representations that encode both places and the sequential relationships between them (Moore & Golledge, 1976, apud Johns & Blake, 2001). Depending on experience and knowledge, some parts of the territory represented in the mental maps created by the students contain more details, while others are depicted more briefly and confusingly (Bagoly-Simó et al., 2016; Dulamă, 2006).



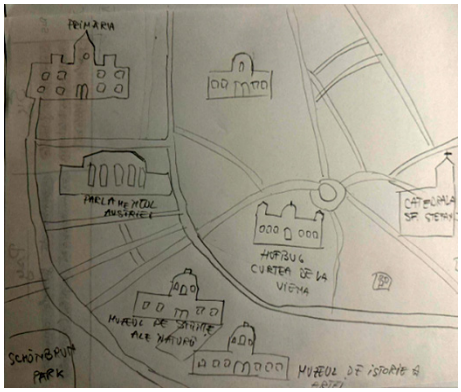
G^A



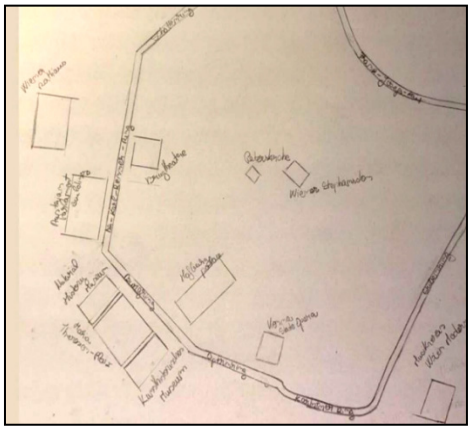
G^B



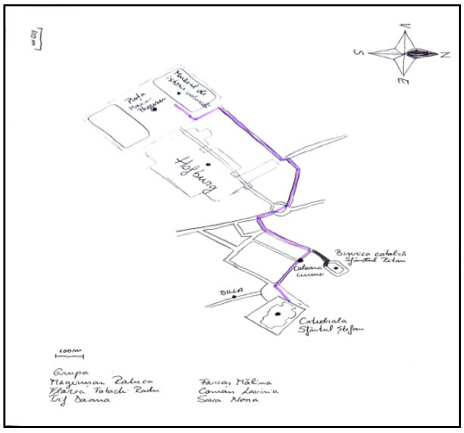
G^C



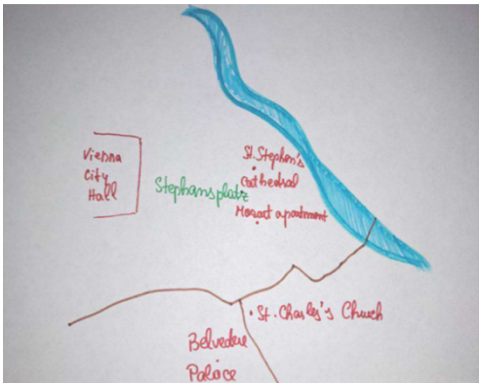
G^D



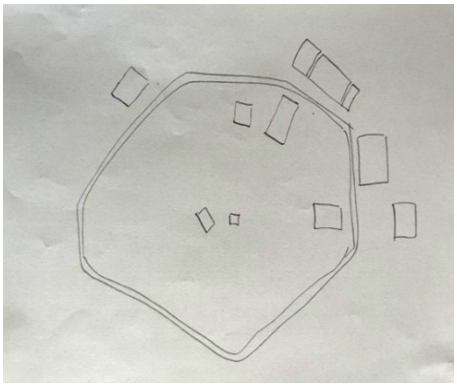
G^E



G^F



G^G



G^H

Figure 1. *The sketches of the tourist route through the historic center of Vienna (mental maps) made by the students*

Since the worksheet was completed by each team upon returning home, the students had the opportunity to use tourist maps and digital maps (Google Maps) to compare them with their own mental maps. This aspect is less noticeable in the case of three teams (37.5%; GA, GG, and GH). The title was mentioned by two teams (GB and GC), and orientation toward the north and scale were noted by one team (GF). Three teams (GA, GC, and GD, 37.5%) created three-dimensional representations. The route was marked and shown on the map in a specific color by three other teams (37.5%; red by GB, blue by GC, and purple by GF), while the other representations were in black and white (except for team GG, which represented the observed reality very briefly and without explicitly showing the route). One team (12.5%; GG) represented the route and buildings very briefly, inaccurately, and superficially, without specifying any names or other cartographic elements. The street network of the historic center, delimited by the traveled route, was partially perceived and represented by half of the teams. Street names are missing, except for one team (GE, but incompletely). The existence of a watercourse (the Danube, even though it was not included in the route) and vegetation elements were captured by one team each (12.5%; GG and GC, respectively). Apart from mentioning some buildings (7 teams; 87.5%) and streets (one team; 12.5%), no team created a legend, and the scale and orientation were mentioned by only one team (12.5%, with the scale being inaccurately represented), which indicates a certain superficiality and gaps in cartographic knowledge and skills (Table 2). The diversity of the mental maps is noteworthy, as is the way buildings (3D, 2D) and the street network are represented, with some places being more accurately depicted than others.

The evaluation grid for the sketches of the tourist route through the historic center of Vienna (mental maps) made by the students (Table 2) includes elements for dating and identification (students' names, class/classes, team number, date of creation), general elements of a map (title, legend, scale, orientation toward North), and other elements: color representation, depicting the route with a line, locating buildings and monuments observed along the route or outside of it, specifying street names, depicting the street network of the historic center, and elements of vegetation. The results show that the students predominantly represented the street network of the historic center and buildings and monuments located along the route. Half of the sketches are in color, and 37.5% include three-dimensional representations. The students paid little attention to the title, legend, and orientation toward North.

Table 2. *The evaluation grid for the sketches of the tourist route through the historic center of Vienna (mental maps) created by the students*

Tasks/Answers \ Group		G^A	G^B	G^C	G^D	G^E	G^F	G^G	G^H	Total	
										Nr.	%
Students' First Name/Last Name		-	-	-	-	-	x	-	-	**1**	**12.5**
Class/Classes and Group Number		-	-	-	-	-	-	-	-	**-**	**-**
Date		-	-	-	-	-	-	-	-	**-**	**-**
Title		-	x	x	-	-	-	-	-	**2**	**25**
Legend		-	-	-	-	-	-	-	-	**-**	**-**
Scale		-	-	-	-	-	x	-	-	**1**	**12.5**
North Orientation (Compass Rose)		-	-	-	-	-	x	-	-	**1**	**12.5**
Three-dimensional representation		x	-	x	x	-	-	-	-	**3**	**37.5**
Color representation		-	x	x	-	-	x	x	-	**4**	**50**
Depiction of the route with a line		-	x	x	-	-	x	-	-	**3**	**37.5**
Edifices and monuments located and observed along the route	St. Stephen's Cathedral	x	x	x	x	x	x	x	-	**7**	**87.5**
	St. Peter's Church	-	x	-	-	-	x	-	-	**2**	**25**
	Natural History Museum	x	x	x	x	x	x	-	-	**6**	**75**
	Museum of Art History	x	x	x	x	x	-	-	-	**5**	**62.5**
	Burgtheatre	-	-	-	-	x	-	-	-	**1**	**12.5**
	Hofburg Palace	-	x	x	x	x	x	-	-	**5**	**62.5**
	Vienna City Hall	-	x	x	x	x	-	x	-	**5**	**62.5**
	Austrian Parliament	-	-	x	x	x	-	-	-	**3**	**37.5**
	Plague Column	-	x	-	-	-	x	-	-	**2**	**25**
Other edifices and monuments located (outside the route)	Schönbrunn Park	-	-	x	x	-	-	-	-	**2**	**25**
	Michaelerkirke	x	-	-	-	-	-	-	-	**1**	**12.5**
	National Library	x	-	-	-	-	-	-	-	**1**	**12.5**
	Vienna State Opera	-	-	-	-	x	-	-	-	**1**	**12.5**
	Muzikverein	-	-	-	-	x	-	-	-	**1**	**12.5**
Street network of the historic center		-	x	x	x	-	x	-	-	**4**	**50**
Street names		-	-	-	-	x	-	-	-	**1**	**12.5**
Vegetation elements		-	-	x	-	-	-	-	-	**1**	**12.5**

x = exist; - missing

2. Analysis of the tasks completed in section B of the worksheet: Natural History Museum (Naturhistorisches Museum Wien)

Regarding *the Natural History Museum (Naturhistorisches Museum Wien)*, the analysis of the responses (Table 1) reflects the following. All teams named two exhibits, which they described according to the explanations provided by the teachers and the information gathered from the museum, making connections with the information learned in geography and biology lessons. Two exhibits stood out: *the Venus of Willendorf* and *a giant rose quartz crystal* from the mineral collection (3 teams; 37.5%). The students wrote that from the associated explanations, they learned that the statuette is a symbol of fertility and abundance, used in religious rituals (or as a talisman for reproductive success), and that rose quartz forms under specific pressure and temperature conditions deep within the Earth's crust ("We made the connection with the geography lessons, where we studied the formation of minerals and rocks, and we better understood the importance of minerals in various fields, from jewelry to industry; this crystal strengthened our appreciation for the beauty and complexity of nature" GF).

The Muonionalusta Meteorite, along with *Tyrannosaurus Rex*, was mentioned by two other teams (25%). The students learned that this meteorite comes from the solidified core of a celestial body destroyed in the early Solar System, providing valuable information about the formation of the Solar System and the events that influenced the Earth's evolution, connecting with the geography lessons (grades IX and XI), where they acquired certain knowledge in geology and astronomy. They also learned about the hunting behavior of *Tyrannosaurus Rex*, its anatomy adapted for speed and strength, and the discovery of its skeletons, which are essential for understanding the evolution of dinosaurs and prehistoric ecosystems. For the skeleton of an *Allosaurus* and a *Diplodocus* dinosaur, 3 teams opted (37.5%). The students made the connection with biology lessons.

Regarding the following requirement ("*Choose a section visited and complete it*"), 5 teams (62.5%) chose the Paleontology section, while 3 teams (37.5%) opted for the Mineralogy section. As interesting elements discovered, on the one hand, the complete skeleton of a *Diplodocus*, a large herbivorous dinosaur from the Jurassic period, was mentioned, as well as the fossil of a woolly mammoth from the Pleistocene, and on the other hand, the impressive collection of quartz crystals in various shapes and colors, including dark violet amethyst, was noted again. The students wrote that the information about dinosaurs and their evolution is linked to lessons about the evolution of life on Earth and geological periods studied in biology and geography classes. They

learned about major changes in Earth's history, such as the extinction of dinosaurs at the end of the Cretaceous period, and how these changes influenced the development of other life forms. The visit to the museum provided them with a more detailed perspective on these topics, concretized through fossil exhibits and 3D reconstructions. They also mentioned that the interactive exhibition provided a practical perspective on the theoretical concepts learned, and the information about the formation and structure of minerals is related to geography and chemistry lessons studied at school, where they learned about rocks, minerals, and their properties.

Regarding the last requirement ("*Describe animal species and fossils observed*"), the Woolly Mammoth (*Mammuthus primigenius*) was noted by 5 teams (62.5%). Its description highlights its adaptations to the cold climate of the Ice Age: dense fur, huge tusks (which could reach up to 5 meters in length), a thick layer of fat, and small ears to reduce heat loss. The exhibition also includes information about its habitat, way of life, and its relationship with prehistoric humans, who hunted it for food and materials. This presentation offers a fascinating perspective on the extinct megafauna and its interaction with the environment. Other animal species or fossils, including a pair of monkeys with human-like traits (*Hominidae*; standing upright), Quetzalcoatlus, and Megalodon, were observed and described by one team each (12.5%).

All the teams were impressed by the details of the fossils and models, such as the *Allosaurus* skeleton, the *Archaeopteryx* fossil, the woolly mammoth, and the *Megalodon* jaw model. The mineral and rock collection, as well as the volcano simulator, along with the *Tissint* meteorite, were noted by one team each (12.5%; GB and GG, respectively).

By participating in the project and completing the practical applications, the students enriched their knowledge qualitatively and quantitatively regarding urban and museum spaces in general, and specifically the historic center of Vienna and the Natural History Museum. At the same time, they made connections between what they learned at school in geography, biology, chemistry, and art education lessons, and the new knowledge they gained. The students became more sensitive to European cultural and spiritual values, becoming more open to ideas of sustainability, tolerance, civilized behavior, and the role of active citizens (Conțiu & Conțiu, 2024b). They recognized the importance of learning through cooperation and the supportive role of group activities in strengthening friendships and enhancing intercultural relations. They were encouraged to speak and understand two internationally spoken languages (English and German).

CONCLUSIONS

The results of the study show that the implementation of practical applications (tourist route, museum visit) as part of a thematic excursion with an interdisciplinary character in an international educational project, along with the use of a worksheet, proved to be an effective tool in identifying gaps in students' knowledge about the historic center of Vienna and the Natural History Museum, urban and museum spaces, as well as in reinforcing this knowledge in long-term memory.

The practical applications represented an innovative way to acquire new information, develop new skills, and enhance other competencies, establish the connection between theory and practice, as well as contextualize learning. The students' discussions in groups and with their teachers contributed to clarifying concepts, completing knowledge, and correcting misconceptions related to significant urban and museum elements and how they integrate into the urban context and the local community, which were identified through the completion of the worksheet.

The analysis of how students completed the worksheets and the materials they attached (sketches) reveals that this process was effective in developing students' skills in field orientation, research, and connecting theory with practice. As a result of the field applications carried out, guided by teachers, and through the careful and responsible completion of the worksheet, along with the inherent documentation of this research stage, students became aware of the importance of field observation for gathering information and the role of the worksheet in organizing data and knowledge based on specific criteria and tasks.

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ANNEX 1. WORKSHEET

Group number, students' first and last names: ……

Class/classes: ……

Date: ……

A. The historic center of Vienna

1. Mention a representative historical building observed and complete:
    a. Name of the building: ……
    b. Year of construction (or century): ……
    c. Architectural style (baroque, gothic, etc.) ……
    d. An architectural detail that impressed you: ……
2. Mention a representative religious edifice observed and complete:
    a. Name of the building: ……
    b. Year of construction (or century, if not mentioned): ……
    c. Architectural style (baroque, gothic, etc.) ……
    d. A detail that impressed you: ……
3. Note a monument or statue observed:
    a. Name of the monument: ……
    b. What it represents (historical, artistic) ……
    c. An interesting detail about the monument: ……
4. How would you describe the atmosphere in the historic center?
    a. Sounds heard: ……
    b. Predominant colors: ……
5. Create a sketch of the route through the historic center of Vienna and note the main tourist attractions observed (on an A4 sheet, with a pencil/colored pencils)……

B. Natural History Museum (Naturhistorisches Museum Wien)

1. Note two exhibits that caught your attention:

Name: ……

A short description: ……

What did you learn from the associated explanations? ……

2. Choose a section you visited and complete it:

a. The name of the section: ……

b. An interesting element discovered here: ……

c. How do the information discovered/received relate to what you have learned in school? ……

3. Observe and describe species of animals and fossils:

a. An interesting animal or a notable fossil: ……

b. What surprised you about these exhibits? ……

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The Value of Training Software Systems in Improving Dyslalia in Students with Intellectual Disabilities

Elena CRIȘAN[1]

ABSTRACT. The correction of speech and language disorders, in general, stimulates the psychic development of the individual, his integration in activity and life, leads to the affirmation of the personality on a social and cultural level. It must be taken into account that communication occurs through language, language being also a tool of thought.

Speech therapists are increasingly challenged in offering and performing high-quality speech therapy for the correction of people with language disorders. For this reason, an association of traditional methods with new logo-therapeutic computer technologies would support the student's motivation for involvement and active participation in the language correction process.

The computer can be an excellent game partner and a good "educator" and its intervention, depending on the variety of programs used and the involvement of special education factors, will be reflected in the shaping of the child's personality. The specialized literature indicates the existence of successful practices in the use of information and communication technologies in general and special education, thus modifying and diversifying the structure of the educational and recovery act.

In the special education units, a series of teaching aids, both classical and modern, are used in the remediation of language disorders, among which we can mention: educational and speech therapy software, accessible, attractive due to the intensity of the colors, the presence special effects, transitions, animation, sound background, which attract students to therapy and transform the speech therapy activity into an extremely pleasant and motivating moment.

Keywords: special education; educational software; language disorders; mental retardation; psychological age of language.

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ABSTRAKT. Die Korrektur von Sprech- und Sprachstörungen stimuliert im Allgemeinen die psychische Entwicklung des Einzelnen, seine Integration in Aktivität und Leben und führt zur Bestätigung der Persönlichkeit auf sozialer und kultureller Ebene. Es muss berücksichtigt werden, dass Kommunikation über Sprache erfolgt, da Sprache auch ein Werkzeug des Denkens ist.

Logopäden stehen zunehmend vor der Herausforderung, qualitativ hochwertige Logopädie zur Korrektur von Menschen mit Sprachstörungen anzubieten und durchzuführen. Aus diesem Grund würde eine Kombination traditioneller Methoden mit neuen logotherapeutischen Computertechnologien die Motivation des Schülers zur Beteiligung und aktiven Teilnahme am Sprachkorrekturprozess unterstützen.

Der Computer kann ein hervorragender Spielpartner und guter „Erzieher" sein und je nach Programmvielfalt und Einbeziehung sonderpädagogischer Faktoren seinen Einfluss auf die Persönlichkeitsentwicklung des Kindes auswirken. Die Fachliteratur weist auf erfolgreiche Praktiken beim Einsatz von Informations- und Kommunikationstechnologien in der allgemeinen und Sonderpädagogik hin, die die Struktur des Bildungs- und Genesungsgesetzes verändern und diversifizieren.

In den Sonderpädagogikeinheiten werden eine Reihe klassischer und moderner Lehrmittel zur Behebung von Sprachstörungen eingesetzt, darunter: pädagogische und sprachtherapeutische Software, zugänglich, attraktiv aufgrund der Intensität der Farben, die Präsenz-Spezialeffekte, Übergänge, Animationen, Tonhintergrund, die die Schüler zur Therapie anlocken und die logopädische Aktivität in einen äußerst angenehmen und motivierenden Moment verwandeln.

Schlüsselwörter: Sonderpädagogik; Lernsoftware; Sprachstörungen; geistige Behinderung; psychologisches Zeitalter der Sprache.

INTRODUCTION

Language research based on concrete or observable facts raises a number of theoretical and practical issues. It must be taken into account that communication occurs through language, language being also a tool of thought. Human thinking is formed based on language and is expressed through language.

The correction of speech and language disorders, in general, stimulates the psychic development of the individual, his integration in activity and life, leads to the affirmation of the personality on a social and cultural level. It is a wish made by specialists in the field of human sciences, concerned with ensuring a harmonious and complex development of man today. Communication makes the human being able to develop, to evolve this by making possible its existence in communion. Human society depends to a great extent on the

development of the communication process, highlighting its importance. People converse with each other, respecting the opinions, ideas and principles of their peers, but keeping their personal arguments, thus supporting each other in their own evolving development and an improvement in behavior. [2]

Speech therapists are increasingly challenged in offering and performing high-quality speech therapy for the correction of people with language disorders. Thus, an increasing number of speech therapists have become interested in the potential therapeutic applications of computer programs. Every speech therapist or therapist has encountered the situation of repeating sustained to correct the pronunciation of sounds, syllables, words and deficient sentences, a fact that attracts a disinterest and a lack of motivation for practice, because a monotony, fatigue and regression sets in correction exercise. With the help of computerized technology, everything is transformed into a friendly, close relationship between the speech therapist and the child with language deficiency, leading to the elimination of the frustration activated by the monotonous repetitions of classical therapy, indirectly also increasing the students' self-esteem.. In an attempt to respond as professionally as possible to people with language disorders, speech therapists use a wide range of techniques. Of these, computerized techniques are considered the most flexible and advanced. For the use of logo-therapeutic technologies, the software must be clinically tested and adapted to the specifics of the various target populations.

As noted by D. Carantina and D.M. Totolan [3] the student with intellectual disability constantly uses a foreign language. Cognitive and motivational areas in the case of such children with intellectual disabilities are affected to a large extent, and fine motor skills are deficient. They show a low interest in learning, extrinsic motivation takes precedence, which will make it more difficult for them to adapt to school requirements. They show a lack of concentration for a longer period of time and fail to adapt to the demands made by the adult.

The research highlights a high potential of computerized technology to complement traditional speech therapy methods, procedures and techniques. In order for training software systems to be fully performing, the progress of these methods must be made in accordance with the needs of the users - software made according to the classic language problems encountered by students. The computer can be an excellent game partner and a good "educator" and its intervention, depending on the variety of programs used and the involvement of innate and environmental factors, will be reflected in the shaping of the child's personality.

According to Gherguț A. [5], the large number of language disorders associated with thinking deficiencies negatively influences language development in children with intellectual disabilities. Thus, its language takes on a confusing

character, which significantly complicates the process of receiving messages. From the perspective of expression, this fact is reflected in a simplified, rigid and unvaried verbal behavior.

The new orientations in the field of special psychopedagogy, in the view of some authors such as: R. Foloștină [4] , O. Istrate [6], A Roșan [10], A. Gherguț highlight the roles that the "computer" and its corresponding software have, that of mediator - supports and motivates the student by adapting learning to his level, a supporting role (the computer ensures the coordination of a faulty sensory or motor channel in another well-supervised one ; this category of applications is useful in working with children with different disabilities, adapting the proposed requirements and tasks to be solved.

The use of these training software systems and the relevant applications is an aspect and a need, and the therapy of such complex language disorders turns into the scene of three actors: the speech therapist - the student - the computer, a scene where each of these participants wants to ensure the success in correcting existing language disorders. The use of information technology is a great achievement for these children, touching to show an option, express wishes, needs by pressing a key. As the abilities of a student with learning disabilities develop, he will get more and more ways to use an information system to clarify, experiment or develop ideas. As a result of these points of view, it is recommended to introduce and use information and communication technology in the framework plans of the learning programs, with the reason to support the teaching and acquisition of knowledge in a motivating school environment and the use of this technology in the training and development of skills of learning [11]. Instructional software systems specifically designed for students with intellectual disabilities are important tools in mediating disabilities.

To live, learn and work successfully in an increasingly complex and information-filled society, students and teachers must use technology effectively. In a healthy educational environment, technology, in the view of authors such as: D. Banes [1], McNaughton [7], P.R. Petrescu [9], can help students: to be able to use a new environment of technology-based learning to learn, communicate, collaborate, produce and develop knowledge.

The use of multimedia in the educational system: - trains multiple senses, supports active learning and increases the value of lessons, adapts to the individual, allows the student to learn at his own pace, connects abstract knowledge to the real world, breaks the barriers between the classroom and real life, allows time migration and space [8].

The potential of information and communication technologies to improve instruction and to make learning more efficient is great, but its full exploitation in education depends on the degree to which the teaching staff is prepared to

integrate them, on the capacity and openness of the entire teaching staff as well as on the available technological resources. The impact of the educational software on the students is obvious: you can see the increase in interest in learning, the increase in class attendance, better school results. From a psychological and pedagogical point of view, they are in a direct causal relationship. Teaching-learning strategies of curricular content through educational software require a detailed study and a good knowledge of the educational reality. Modern IT means significantly increase the attractiveness of the educational process.

The child with intellectual disability can thus transpose mistakes from the oral language to the read-written language, based on the principle of similarity of appreciation and contagion. From a phonetic point of view, it is observed that the child with intellectual disability cannot correctly articulate all the sounds, thus making frequent substitutions, omissions, inversions as a result of the lack of development of the ability to differentiate sounds, the reduced development of phonemic hearing. Verbal communication is distorted in the child with intellectual disability, he does not have equal opportunities to initiate and continue such a speech or dialogue. Thus, the spontaneity of speech of the child with mental decision-making is lower than that of communication partners with mental psychic development.

For individuals who do not have any mental impairment, training software systems make it much easier to solve tasks, whereas for individuals with mental impairment, these training software systems make things doable.

RESEARCH ORGANIZATION AND METHODOLOGY

Purpose: To investigate the results of the application of an intervention program in the speech therapy of students with mental deficiencies, based on the use of the educational software Logopedix compared to the results obtained in the classical speech therapy.

OBJECTIVES

1. Detection, complex evaluation and diagnosis of the most frequent language disorders of students with mental deficiencies from the groups proposed for research;
2. Development and application in speech therapy practice of an Intervention Program for the correction of language disorders of the students included in the study, based on the use of the educational software Logopedix.

3. Comparative study (by statistical methods) of the results obtained in speech therapy carried out with the help of the computer program and in classical speech therapy in order to determine the effectiveness of the Logopedix educational software.

4. Quantitative and qualitative analysis of the progress achieved in correcting the pronunciation disorders of the subjects from the 2 groups (experimental - in which the educational software was used; control - in which classical methods were used in correction).

Assumptions

1. It is assumed that, in students with mental deficiency, the group of sigmatisms and parasigmatisms represents the most common disorder of the dyslalic type.

2. It is assumed that, by integrating the educational software Logopedix in the mediation of language disorders in children with intellectual disabilities, results significantly superior to those obtained through classical speech therapy are obtained.

3. It is assumed that a mediating and necessary factor in the use of computer programs and techniques in the mediation of language disorders is the degree of deficiency of the children.

The research was carried out during one school year in the "Constantin Păunescu" Special Secondary School, Tecuci, county. Galatians, and included the following stages:

1. The initial stage - September - November - had as milestones:

- theoretical documentation related to the research topic, by studying and analyzing Romanian and foreign specialized works mentioned in the bibliography (books, articles, legislative documents in classic and electronic format);
- establishing objectives and formulating research hypotheses;
- the correlation of the proposed objectives with the research topic, with a working methodology suitable for verifying the hypotheses and the particularities of the subjects studied;
- establishing, preparing and applying the test battery for the complex initial speech therapy assessment, collecting the results, recording and analyzing them;
- establishing the structure of the groups of subjects (experimental and control), based on the results obtained at the initial assessment tests;

- designing and drafting the intervention program, based on the Logopedix speech therapy software.

2. The experimental stage - December - April - consisted of a formative experiment that sought to influence the subjects, by applying a program to correct language disorders based on the use of the Logopedix software in the case of the experimental group, and on classical speech therapy, in the case of the control group.

3. The final stage - May - June consisted of:

- reapplying the battery of tests;
- analysis and interpretation of the results, comparing and correlating the final results with the initial ones;
- creation of tables and graphs;
- establishing conclusions and drafting the paper.

Subject batches

The initial batch of subjects included in the study consisted of 93 students of the "Constantin Păunescu" Special Secondary School, Tecuci, county. Galatians, characterized by:

- gender: 65 boys / 28 girls;
- chronological age: between 9 - 18 years;
- classes: I - VIII:
- degree of mental deficiency:
    - 42 subjects - severe mental deficiency: QI = 25 – 35;
    - 51 subjects - moderate and mild mental impairment: QI = 35 – 70.

Note: the level of intellectual development of the subjects (the value of the intelligence coefficients) was not calculated but was extracted from the personal files of the children submitted to the school administrative office).

Following the testing in the initial stage, based on the detection of the most frequent pronunciation disorders, the subjects who were subsequently introduced to the complex speech therapy program were selected, divided into two groups, as follows:

- The experimental group – 30 students with pronunciation disorders - who participated in speech therapy using the educational software Logopedix.
- The control group - 30 students with pronunciation disorders - who participated in speech therapy using classical (traditional) methods in correcting the affected sounds.

The distribution of students into the two groups was carried out taking into account the respect (as far as possible) of the homogeneity criterion, depending on the results obtained at the initial assessment, along with other criteria:

a. Criterion of the degree of mental deficiency:
- severe mental deficiency: 3 students in each group;
- moderate mental deficiency: 6 students in each batch;
- mild mental deficiency: 16 students in each batch;
- borderline intellect: 5 students in each batch.

b. The criterion for the presence of dyslalia:
- students without pronunciation disorders: 20% in the experimental group and 13% in the control group;
- simple dyslalia, affecting a sound: 20% in the experimental group and 7% in the control group;
- dyslalia, affecting two sounds: 20% in the experimental group and 20% in the control group;
- dyslalia, affecting three sounds: 13% in the experimental group and 13% in the control group;
- dyslalia, affecting more than three sounds: 27% in the experimental group and 47% in the control group.In the formation of the two groups, the possible influence of some random variables was also taken into account, such as: the motivational level of the subjects, the anatomical-physiological characteristics of the phono-articulatory apparatus, the level of development of phonemic hearing, the experience in using the computer (the majority of students who use the computer at home were assigned to the experimental group).

Description of the tests applied

The following methods were used in the scientific investigation process:

- theoretical:
  - analysis, synthesis and interpretation of information from specialized literature;
  - the hypothetical-deductive method of interpretation and explanation of the results obtained.
- empirical:
  - individual anamnesis;
  - individual and group observation;
  - sets of tests for knowledge of some aspects of the language (psychological age of the language, lexia examination test).

- statistical data processing (through the S.P.S.S. software):
  - descriptive statistics: calculation of average results, by batches, and their graphic representation;
  - inferential statistics (t-test): establishing the difference between two means in the case of independent samples; establishing correlations between variables.

To these methods were added a wide variety of speech therapy methods and procedures used in activities with students.

RESULTS

A diverse range of methods was used for data analysis and interpretation, with the aim of highlighting as clearly as possible the results of the integration of the Logopedix educational software in speech therapy, compared to classical therapy. Thus:

- in the Initial Stage, the application of tests was aimed at detecting language disorders, in relation to the psychological age of language and lexical difficulties; depending on the results obtained by the subjects in the initial tests, the composition of the two groups (experimental and control), the speech therapy groups and the objectives of the intervention program were established.

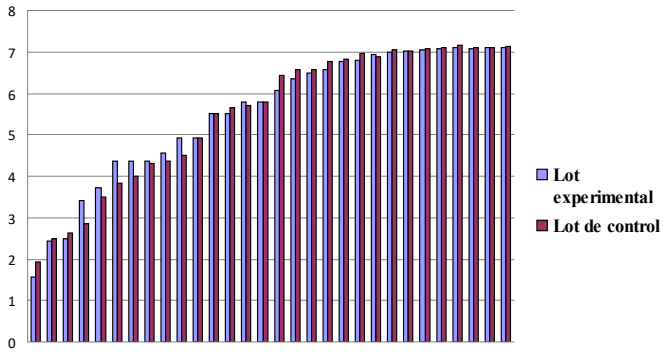
- in the Final Stage, the application of the tests and the interpretation of the results had the purpose of comparing the initial results obtained by the students with the final results, but also to check the efficiency of the speech therapy intervention program made with the help of the computer, in comparison with the speech therapy program applied by classical methods, as well as the validation of research hypotheses; the comparison aimed at the initial and final results obtained by students from the same batch, as well as establishing the differences between the results obtained by the two batches.

INITIAL STAGE

Tests for knowing the psychological age of language. (Source: Vrăsmaş E., Stănică C., 2003)

The psychological age of the language is an important parameter according to which the composition of the experimental groups and speech therapy groups was determined.

The test is an objective tool for determining language delay and a rigorous criterion for assessing the progress registered following the application of the speech therapy program.



Graphic 1. *VPL - initial - both lots*

From the comparative graphic presentation of the initial results obtained in this sample, we can see the very balanced distribution of the subjects regarding the psychological age of the language.

The quantitative and qualitative analysis of the initial results obtained as a whole in this language test, leads to the conclusion that the examined students with mental deficiencies have a significantly reduced oral communication capacity, located far below the normal limits for their chronological age, as a result of the characteristic features of this type of deficiency (genetic viscosity, inertia, heterochrony, etc.). Thus:

- the average obtained initially by the students from the experimental group is 4,795, compared to the average of the chronological age, which is 8.15; therefore, the initial delay in language development in this group is 3.35 years, so quite large;

- the average obtained initially by the students from the control group is 4.785, compared to the average chronological age, which is at the level of the value of 8.25 years; therefore, the initial gap in language development in this group is 3.46 years, similar to that of the experimental group.

Table 1. *Means / differences - VPL - both batches – initial*

Subject	*Chronological age (average)*	*Psychological age of language (media)*	*VC - VPL (difference)*
Experimental batch	8.15	4.795	**3.35**
Control lot	8.25	4.785	**3.46**

Analyzing the results from the point of view of the correlation between the level of mental development and the initial results obtained in the test of the psychological age of language, it is noted that the gap is the greater the lower the intelligence quotient and vice versa.

Test for the examination of lexia. (source: C. Paunescu, 2003)

1. Examining conscious reading at word level

In this sample, the initial testing, the two batches subjected to the research obtained the following results:

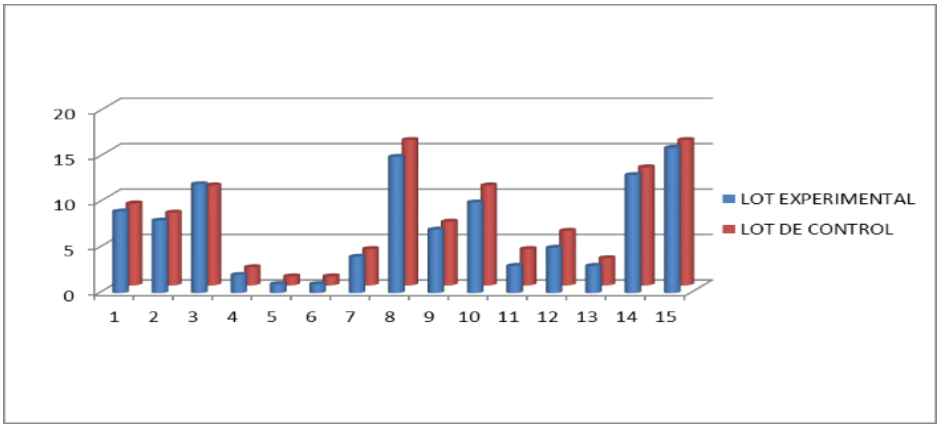


Figure 1. *Conscious reading at the word level - comparative - both groups – initially*

2. Examining conscious reading at the sentence level

In this sample, the initial testing, the two batches subjected to the research obtained the following results:

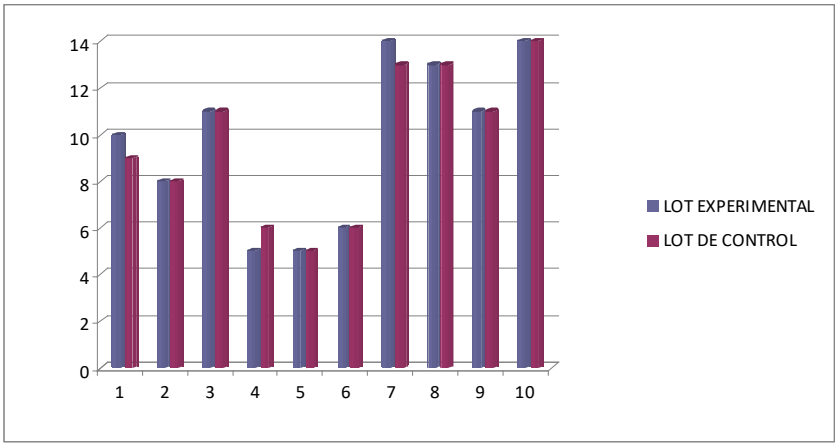


Figure 2. *Conscious reading at the level of sentences - comparative - both groups – initially*

Statistical analysis (post - initial stage) - lexia examination samples

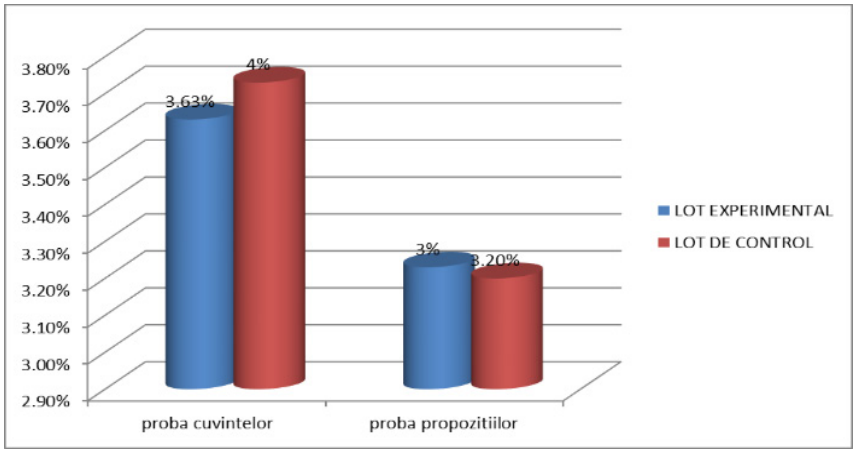


Figure 3. *Lexia test samples - BOTH BATCHES - comparative – initial*

Observations: subjects who failed the reading test had difficulty in:

- polysyllabic words: comb, sprinkler, scissors;
- the words containing the groups of letters ge,ci,ghe;
- words containing consonant combinations gr, bl, etc.;

FINAL STAGE

The evaluation that took place in the final stage was aimed at highlighting the evolution of the subjects from each group in terms of language characteristics, as a result of the speech therapy intervention carried out on the basis of the intervention program, as well as highlighting the differences between the results obtained by the students from the experimental group (who have benefited from computer-assisted speech therapy, through the Logopedix educational software) and the results obtained by students from the control group, who benefited from speech therapy classic.

It should be emphasized that the speech therapy intervention programs were similar and that the initial and final evaluations were performed with the same battery of tests, under identical conditions for all subjects.

The purpose of this final evaluation was to verify the degree of achievement of the objectives and the validation of the hypotheses.

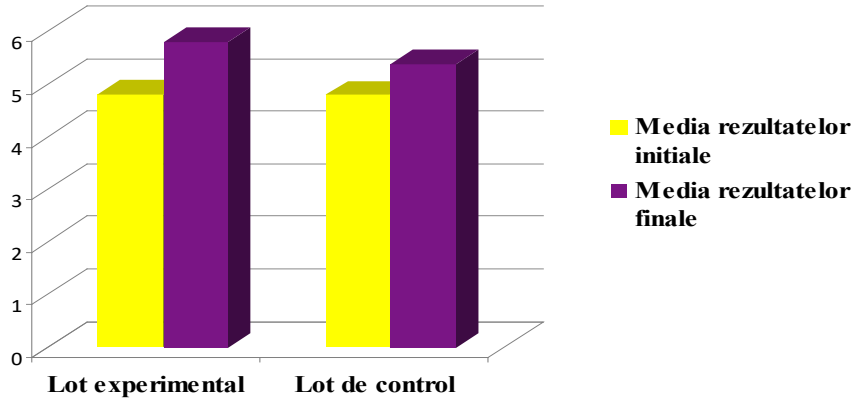
Tests for knowing the psychological age of language

The comparative analysis of the results obtained following the application of the speech therapy intervention program, by the two groups of subjects in this set of samples, highlights a slightly superior performance of the students in the experimental group. Thus, in the final stage:

- the students in the experimental group obtained an average of 5.8085 years, compared to the initial average of 4.7955 years;
- the students in the control group obtained a final score of 5.3950 years, compared to the initial score of 4.7855 years.

From the comparative graphic representation of the averages obtained by the two batches, in the two stages of application of the set of samples, we can see the favorable evolution that both batches had, as a result of the application of the program, as well as the slightly superior difference in favor of the batch experimental, in the case of which we worked with the Logopedix educational programs.

At the beginning of the intervention program, the initial results were similar, and after its application, the averages became slightly different.



Graphic 2. *VPL - comparative - initial / final - both lots*

The results, calculated by the SPSS 19.0 program, showed that:

- the students in the experimental group, who benefited from the language development program using the Logopedix software, compared to those in the control group, who benefited from speech therapy through classical methods, achieved a slightly higher performance (m = 1.0895 growth years, standard deviation = 1.2726);

- students in the control group also achieved a slightly higher performance compared to the initial results (m = 0.6095 months of growth, standard deviation = 1.66203);

Statistical data (t = 0.883, p = 0.383; Cohen's d index = 0.28) show a small effect size. Therefore, **there are no significant differences between the experimental and the control group regarding the development of the psychological age of language**.

The explanation of these results is, among others, that the psychological age of language is a development parameter that does not have a spectacular evolution in children with mental deficiencies of small school age. Experience shows that results are seen four years after the start of schooling, when it is found that the psychological age of language increases, on average, by approximately 3 years, with particular differences depending on the degree of mental deficiency.

In conclusion, it can be considered that the development obtained on this level, as a result of the application of the speech therapy program, is a good one, especially in the case of the experimental group, although the differences are not significant from a statistical point of view. These increases reflect the

global results of the speech therapy program applied in the experimental stage, but also the positive influences of the language development didactic programs in the student classes.

CONCLUSION

Within the modern means used in speech therapy activity, an important place is occupied by the use of computers and educational-therapeutic software. These modern means create a special learning environment and cause a considerable increase in interest in correct pronunciation.

In the conception and use of audio-visual techniques in the therapy of different disabilities, not only the specifics of the disorder must be taken into account, but also the particularities of speech, age and personality of the subjects, the level of mental processes and language development, the particularities of representations, the spirit of observation, the possibilities of generality and abstraction, the ability of children to receive and interpret auditory and visual stimuli. If these particularities are ignored in the development and use of audio-visual techniques, some limits and shortcomings may appear - the determination of intellectual and affective apathy, the risk of passivity, the standardization of behavior. We believe that in order to avoid these shortcomings, the use of audio-visual techniques must be done with discernment, so that they find justification each time within a clearly expressed psycho-pedagogical strategy.

Audio-visual techniques can lead to a kind of verbalism of the image, when they only favor associations unrelated to authentic activities. Preventing the shortcomings that may appear in the inappropriate use of audio-visual techniques, the therapist, through his knowledge and inventiveness, can acquire a valuable help in the therapy activity. Modern audio-visual techniques present superior modes of perception compared to traditional ones, because they contain data, information, phenomena, richer, better selected objects, which can be reproduced in their natural ambience and dynamics.

An effective integration of communication technologies in the educational process is achieved when the teacher changes his teaching strategies and moves from teacher-centered activities to learning-centered activities. The results of the effect of the use of technology in schools are beneficial for students, a statement reinforced by the improvement of school results. It is confirmed that students change their attitude towards themselves and towards learning, they feel more motivated to learn, their self-esteem and confidence in their own strength increases when they use IT tools in school.

Instructional software systems provide students with learning disabilities with the necessary support to adapt to mainstream schools and to attend general curriculum classes. They help the student to transform the tasks from the classic format to the software format, allow detailed observation, organization and editing of the writing requirements, thus motivating the students to participate with confidence in their own forces in the achievement of speaking, reading and writing tasks.

The teacher's action cannot be substituted by the computer, instead he, the teacher, can enhance the reading skills of children and adults with intellectual disabilities together with the computer. Instructional software systems better keep their attention, train reading, and correlate it with other aspects of language or intellectual activity. There are also limits in using the computer with regard to this curriculum area, especially those related to auditory distinction and the correct distinction of groups of letters, poor eye-motor coordination and limited tracking of eye movements from left to right of the page, in the case of reading coming to identify a limited number of whole words that have the same length, the same beginning, ending letter or the same placement in the sentence.

It is necessary to train teachers in the field of electronic didactic design, computer-assisted training through initial and continuous training courses. It is also necessary to promote educational software within national and international conferences and symposium or by creating web pages.

All the factors involved in education must be aware that the integration of computer-assisted instruction in the instructional-educational process of students with learning difficulties is a necessity. It is necessary to develop educational software of the type "lesson generators", which are easy to use in order to allow all teachers to develop their own electronic lessons according to the particularities of the group of students or according to the particularities of a single student. In order to exploit the real potential of each student with intellectual disabilities, an appropriate assessment and the development of a personalized individual plan, which includes the use of software training systems and computer-assisted training according to the particularities and needs of each student with intellectual disabilities. Information and communication technology together with training software systems do not exclude traditional teaching-learning methods, but complete them so that the entire educational process integrates with the needs of students with special needs.

The therapy that involves the use of speech therapy software determines the activation of motivational impulses in the participants. The use of the computer as a support for learning cultivates children's interests for the therapeutic activity. By systematically presenting and offering new, rich, well-selected

information that can be reproduced in its natural ambience and dynamics, the computer maintains the child's curiosity for continuous knowledge and increases the motivation to learn.

Both classical therapy and therapy involving the use of speech therapy software determine the activation of motivational impulses in the participants. The cognitive complexity of the computer is counterbalanced, in the case of classical therapy, by the relational stimulation that engages the children's psychic energy. The use of speech therapy software developed in this sense allows a better focus of the child's attention on the therapeutic activity and creates a psycho-stimulating context for language development.

Using training software systems can help people with disabilities compensate for their impairment, become less dependent, and enrich their repertoire of skills and capabilities. But research conducted over time has shown that these favorable effects were not possible in all situations. This highlights the consistent problem between the needs of the beneficiaries and the strictness of the technology, a concordance that was omitted when government or quality organizations decided to provide software to educational units that integrate children with special educational needs.

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The Integration of Mobile Learning in Teaching English for Law Enforcement. A Case Study

Cristina PIELMUŞ[1]

ABSTRACT. As the world entered the 21st century, mobile devices have taken over a large part of our daily lives, being used not only as communication tools, but also as instruments that allow easy access to information. Even if these devices have not yet been formally introduced into language teaching and learning, still they have been used in educational setting for a while now, at least informally. Against this backdrop, the present paper starts with a literature review of concepts such as *mobile learning* and *MALL (mobile assisted language learning)* and then shifts focus to the context of teaching English for Law Enforcement, while attempting to briefly investigate how mobile devices can be employed in such an environment, what advantages and disadvantages the use of mobile devices can bring along in language education, as well as to what extent these gadgets can enhance the students' learning autonomy.

Keywords: mobile learning, MALL (mobile-assisted language learning), mobile apps, student-centered learning, self-regulated learning, ELT, English for Law Enforcement

ABSTRAKT. Mit dem Eintritt in das 21. Jahrhundert haben mobile Geräte einen großen Teil unseres täglichen Lebens übernommen und werden nicht nur als Kommunikationsmittel, sondern auch als Instrumente verwendet, die einen einfachen Zugang zu Informationen ermöglichen. Auch wenn diese Geräte noch nicht offiziell in den Sprachunterricht und das Sprachenlernen eingeführt wurden, werden sie doch seit einiger Zeit zumindest informell in Bildungseinrichtungen verwendet. Vor diesem Hintergrund beginnt das vorliegende Papier mit einer Literaturübersicht über Konzepte wie mobiles Lernen und MALL (mobiles unterstütztes Sprachenlernen) und verlagert dann den Fokus auf den Kontext

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des Englischunterrichts für Strafverfolgungsbehörden, wobei kurz untersucht wird, wie mobile Geräte in einer solchen Umgebung eingesetzt werden können, welche Vor- und Nachteile die Verwendung mobiler Geräte im Sprachunterricht mit sich bringen kann und inwieweit diese Geräte die Lernautonomie der Schüler verbessern können.

Schlüsselwörter: mobiles Lernen, MALL (mobiles unterstütztes Sprachenlernen), mobile Apps, schülerzentriertes Lernen, selbstreguliertes Lernen, ELT, Englisch für Strafverfolgungsbehörden

1. INTRODUCTION

1.1. Mobile learning (M-learning) vs Mobile-assisted language learning (MALL)

Mobile learning is a relatively new approach to education, as mobile devices have been gradually included into learning in the latest years. Some authors show that the use of mobile devices, such as smartphones or similar portable gadgets with a wi-fi or data traffic connectivity, has led to a shift in the traditional teaching and learning process (Kukulska-Hulme, 2009). There are mobile apps that can easily be downloaded on the mobile device through the Internet and they can be quickly accessed at any time and in any place, both in the classroom and outside it, due to the current large-scale availability and portability of mobile devices.

In addition, *mobile learning* refers to the integration of mobile devices in all fields of education, including language learning. Therefore, the characteristics of mobile technology such as the portability and information accessibility play an essential role in the enhancement of English language teaching and learning (El-Hussein & Cronje, 2010). The main feature of m-learning consists in the freedom of the students to decide on the time and place of the learning (Kukulska-Hulme, 2012).

Moreover, *mobile learning* can be defined as the language learning that is carried out through the medium of portable devices such as smartphones, laptops, personal digital assistants etc. Another feature can be added to the definition: the learning enabled by mobile devices is independent of time and place. For this reason, Mobile learning implies mobility of technology, of learner and of learning. Thus, mobile learning can be viewed as less organized or less formal than *e-learning*. However, when used in class, in a formal educational setting, the teacher can plan the lesson so that there is structure and organization in the unfolding of the lesson.

On the other hand, self-study is important in language learning. Still, students are less and less inclined to resort to traditional resources such as printed books for self-study purposes and instead they are more prone to study online using technology. As the use of mobile technology is increasing, a teacher or trainer can offer students the possibility to study anytime, anywhere and whenever they find convenient through their mobile devices. There is a wide array of mobile apps useful for learning English and any other language, for that matter, ranging from online dictionaries to apps focused on the study of various levels or skills of English, such as: Duolingo, GrammarUp, SpeakingPal English, EnglishListening, FluentU, Memrise etc.). The purpose these apps are designed for is to also improve the learners' language skills: listening, reading, writings and speaking.

Young people are more and more enthusiastic and independent users of mobile devices, so they can rely on internet-based or assisted language learning to conduct independent language learning and academic writing (Conroy, 2010). Email, online chat or online discussions can be elements included in internet-based instruction and they can facilitate instructor-leaner and learner-learner interactions (Shih, 2011).

The emergence of mobile apps about education has changed the traditional learning mode, which gradually shifted from the teacher-centered to self-regulated learning, while the learner shifted from the acquisition of knowledge to the construction of knowledge through active learning (Yiping & Lei, 2010).

Mobile-assisted language learning (MALL) is a subset of both M-learning and CALL (Computer-assisted language learning). Whereas *CALL* refers to the use of personal computers in language learning as a means to "enhance creativity and collaboration, particularly through social networking" (Beatty, 2010), *MALL* is viewed as an approach distinct from CALL, as it refers to the employment of personal, portable, wi-fi connected devices that "enable new ways of learning, emphasizing continuity or spontaneity of access across different contexts of use" (Kukulska-Hulme & Shields, 2008, p. 273).

The advantages of MALL have been emphasized in the literature as compared to CALL. Thus, among the most relevant features of mobile devices, which personal computers cannot offer, there are: portability and mobility, interconnectivity, context independence, individuality (Kukulska-Hulme, 2009). The emergence of such mobile devices, which can easily provide access to various on-line applications and the internet, as well as store various applications, has led to the instructors' increased interest for introducing such technology in language learning. Godwin-Jones (2011) argues that the new portable and handheld gadgets have fueled the "mobile app fever", which can be downloaded from App Store, Google Play, Windows Phone Sore, Blackberry App World etc. There are numberless

language learning apps, available for either free or paid download, which vary from beginner to advanced level, from primary and secondary to tertiary learners. As a rule, tertiary learners are college students or adult learners.

Mobile-assisted language learning can bring about the autonomy of students in the learning process, and they can not only contribute to the improvement of their language competence, but also increase their learning motivation. This is due to the fact that mobile apps have the advantage of integrating various media, such as text, picture, animation, audio and video support, which all create a multimedia instructional material, capable of stimulating students' interest in studying. For instance, the DuoLingo app can contribute to the enhancement of students' both listening and pronunciation skills, while employing varied multimedia input for studying a large variety of foreign languages through the medium of another language the learner has already a given competence in.

However, one of the disadvantages of mobile learning is that there is a wide array of language learning apps available for download, which makes it very difficult for learners to discern which one suits their learning needs best. For this reason, a prior research of potential apps that can be effective and serve a target group's learning needs might be carried out in advance by the language teachers, who can subsequently recommend the most suitable ones to their students. Some of the authors, who reflected on this topic, point out that such recommendations and suggestions about the most relevant apps and their effective use in learning English are missing (Liu & Xuan He, 2014).

1.2. Student-centered learning vs Self-regulated learning in MALL

The *teacher-centered approach* is a pedagogical approach which places the teacher at the forefront of the teaching process, because he/she is the decision-maker of what and how is taught and tested in class (Amstrong, 2012). This is a traditional approach to teaching, where the agency lies with the instructor (Diaz at al., 2000). The teacher is usually in the center of the classroom delivering the instruction or transmitting the information with little involvement, input, or feedback from the students. The teacher is the one who constructs the learning environment by deciding what and how the students should do in the classroom.

In the *student-centered learning* approach, the students are involved in the decision on what and how they will learn and are allowed options of how they will be assessed. During this process, the students create knowledge for themselves, extracting information that they think is suitable for them, and matching the existing knowledge (Suzan, 2008). In this approach, students actively participate in and are accountable for their own learning. In addition, both students and teachers interact equally, while collaboration and communication between the students is encouraged through group and pair work.

The *self-regulated learning* is the kind of learning that intertwines 3 variables: metacognition (thinking about one's thinking), strategic action (planning, monitoring, and evaluating personal progress against a standard), and motivation to learn (Boekaerts & Corno, 2005). The learners learn something by taking control of and evaluating their own learning and behavior (Ormrod, 2000). With self-regulated learning, autonomy and control are at the forefront of the learning process (Paris & Paris, 2011). The students rely on their own internal resources to govern their learning (Zimmerman, 1989). In self-regulated learning with the help of online resources students can easily access information and determine when and where to learn (Allyson & Winne, 2001).

MALL can motivate and engage English language learners to develop their language skills themselves (Traore & Kyei-Blankson, 2011). Similarly, while using mobile apps to learn, the students are more likely to try to complete the study task independently, which appeals to their self-management and responsibility. Moreover, mobile devices support students in becoming autonomous and independent so as to extend their learning beyond the time constraints and spatial confines of the academic environment (Beechler & Williams, 2012). MALL allows students to conduct self-access English learning, while offering the flexibility that increases the learner's autonomy and proficiency.

Mobile apps provide the English learning students a multitude of mediums and opportunities for learning, among which printed texts, audio, visual or multimedia resources. Moreover, mobile apps can help English learners develop both productive and receptive skills (deHann & Johnson, 2012). For instance, *e-dictionary apps* can expand participants' vocabularies, which leads to the improvement of their skills of reading and writing (Wang, 2012).

1.3. Advantages and disadvantages of mobile learning

The wide array and popularity of mobile applications for learning English have contributed to making the study of a foreign language more accessible and efficient. However, the same large availability and broad choice can lead to confusion and information overload among the students (Sudhana, K. M., 2015), who do not have the ability to discern which application is most suitable for their learning needs. For this reason, the role of the teacher is essential in guiding their students' learning and helping them by recommending suitable language learning applications to be used. Still, such applications can foster the students' language *learning autonomy,* which is defined by Holec (1981, p. 3) as learner self-direction and control over the learning process (Holec, H., 1981).

Among the advantages of mobile learning we can also mention that the students get the opportunity to practice listening, as well as their interest in learning languages is increased when using such apps. *Interest* is viewed in literature as a kind of intrinsic and internal motivation of language learning and students will lose their desire to learn a language if they are not interested in it (Yu, Y., 2016, September 20).

The use of a mobile language learning application makes the students employ their mobile devices in a positive way. The so-called "addiction" to mobile phones has been a topic of controversial debate in many settings across the globe and in most educational environments these devices are banned in the classroom (Long, C. et al., 2013, Wang, X. & Wu, A., 2012). However, such devices have become indispensable tools in contemporary society due to mobile technology developments (Sudhana, K. M., 2015). Therefore, the solution would be to advise students to use them reasonably and wisely instead of prohibiting their use altogether. It would be ideal if students could be instilled the notion that mobile devices could serve primarily as learning tools. Moreover, such mobile language learning applications have the advantage of exposing students to authentic language learning contexts. Such exposure is known to contribute to the improvement of students' language learning skills. Not only these applications give students the opportunity to practice language skills (such as reading, listening, and even speaking), as well as pronunciation and vocabulary (by repeating words and complex structures), but these apps also offer them the occasion to learn and practise spelling and grammatical structures.

Another advantage of using such language learning apps is that students can practice the learning in their own time and space without any interference from outside or the assessment of others, thus gaining more confidence in the use of the language. They can assess their own progress by comparing their performance to the original speaking and their writing against the provided answers, thus being able to adjust or correct their own language, either in speaking or in writing. In addition, such language learning apps can contribute to the students' personalized learning. In a personalized learning environment, academic goals, curriculum, content, method and pace can all vary (Mo, M. & Zhang, J., 2012).

Apart from the advantages of using mobile English learning described above, there are also some disadvantages. Among these we can mention the inability of such apps to provide the context and the means for group work or discussions, therefore being a tool solely suitable for individual study. What's more is that not all students have the intrinsic motivation to engage in self-study using mobile apps and the teacher must find adequate solutions or institute the proper guidance to stimulate such students to actively participate in app-aid language learning.

2. CASE STUDY

2.1. The integration of mobile learning in teaching English for Law Enforcement

In a former paper we undertook the task to define what English for Law Enforcement (LEE) is by viewing this variety of English against a larger pool of more well-known and clear-cut concepts. Thus, we ascertained that in order to define LEE, one should start with breaking down the over-arching concept of ELT (English Language Teaching), which encompasses concepts such as EFL (English as a Foreign Language) or ESL (English as a Second Language). In its turn, ESP (English for Specific Purposes) is a branch of EFL/ESL and it consists of other two subcategories, which are: EAP (English for Academic Purposes) and EOP (English for Occupational Purposes). Therefore, as it refers to an occupational field, English for Law Enforcement (LEE) is a variety of ESP, embedded in EOP (Pielmuș, 2018, p. 569).

When it comes to integrating mobile devices into teaching and learning LEE, Figures 1 to 5 display some of the tasks we effectively used in class by resorting to smart phones as a substitute for the traditional ICT devices, such as laptops and computers. The activities were designed to cover police-related topics as they are included in the law enforcement students' curriculum for languages, having also in view to give them opportunities for the acquisition of specialized vocabulary and the practice of all language skills, both receptive and productive.

Depending on the focus of the LEE lesson, we found out in practice that any kind of task can be approached using a mobile device, starting from vocabulary to language skills-focused activities. Thus, students can not only acquire and reinforce specialized law enforcement vocabulary, but also practice receptive and productive skills. On the one hand, Figures 1 to 4, for instance, tackle the topic of "Crimes and Criminals" and showcase vocabulary practice tasks ranging from matching exercises to filling-in crossword puzzles, word associations or arranging vocabulary in grammatical categories.

Match the names of the crimes with their appropriate definition:

Crime	Definition
ESPIONAGE DRUG TRAFFICKING ARSON EXTORTION HATE CRIME EMBEZZLEMENT BURGLARY CONSPIRACY BRIBERY BATTERY	1. Any wilful or malicious burning or attempt to burn, with or without intent to defraud, a public or a private property of another.
	2. The attempt or completed action of offering or accepting money or gifts in exchange for an action by an official or person in a public or legal position of duty.
	3. Touching, striking, hitting and kicking of a person by another against that person's will.
	4. Committing a crime against a person because of that person's race, religion, ethnicity, sexual orientation or other personal characteristics.
	5. Import and export of narcotics and illegal prescription drugs past points where they are prohibited by law.
	6. The misappropriation or misapplication of money or property entrusted to one's care, custody, or control.
	7. Two or more people agreeing to commit or planning to commit a crime, and taking action toward committing that crime.
	8. The act or practice of spying or of using spies to obtain secret information, as about another government or a business competitor.
	9. Unlawful entry of a structure to commit a felony or a theft.
	10. The criminal act of threatening violence, harm to reputation, property damage or government action to another in order to obtain property, money or an official act.

Figure 1. *Vocabulary task 1*

Fill in the puzzle with different kinds of THEFT that match the definitions below. Some letters have already been filled in. (1) is an example. (Pielmuș, C., 2012, pp. 109-110)

1 ***theft*** **the illegal taking of another person's property without that person's freely-given consent**

2 _____ stealing money and valuables from a person without their noticing the theft at the time

3 _____ deceiving people so as to fraudulently gain money or property

4 _____ operating another person's vehicle without permission from the owner followed by abandonment of the vehicle

5 _____ fraudulently assuming a person's identity, typically in order to access financial resources (2 words)

6 _____ stealing people's property by use of violence, usually in a public place

7 _____ taking valuables from a person by force or threat of force or by inducing fear on the victim

8 _____ unauthorized access to a computer system

9 _____ stealing goods from a store

10 _____ dishonestly appropriating money or property by one or more individuals to whom these have been entrusted

11 _____ the illicit entry into a building for the purpose of committing theft

12 _____ stealing a motor vehicle by forcing the driver out of the car with the threat of bodily injury.

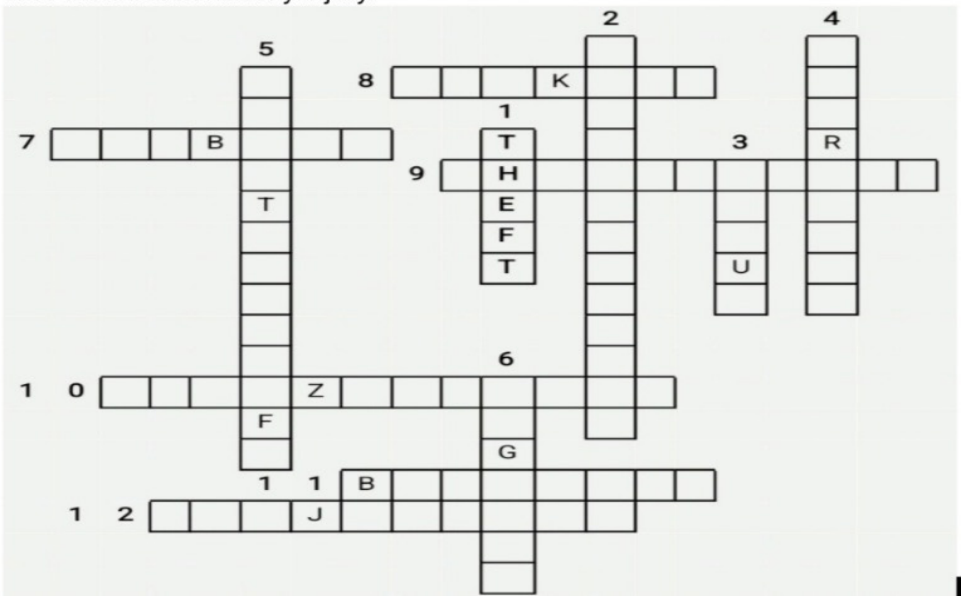


Figure 2. *Vocabulary task 2*

Crime-related vocabulary – Actors: offender, victim, witness, investigating officer. (Pielmuş, C., 2012, pp. 110-111)

When it comes to *crime* several actors may be involved: *offender, victim, witness, police officer.* Look at the verb phrases that denominate activities performed by any of the actors mentioned, which are connected with the idea of "crime". Arrange each phrase according to the actor that performs the activity in the table below.

Offender	Victim	Witness	Investigating Officer

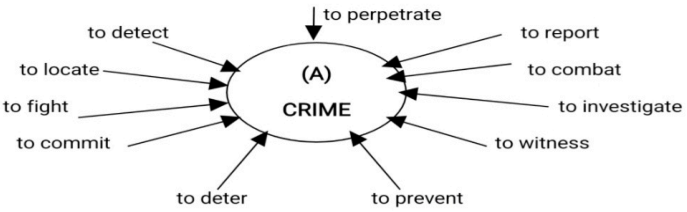


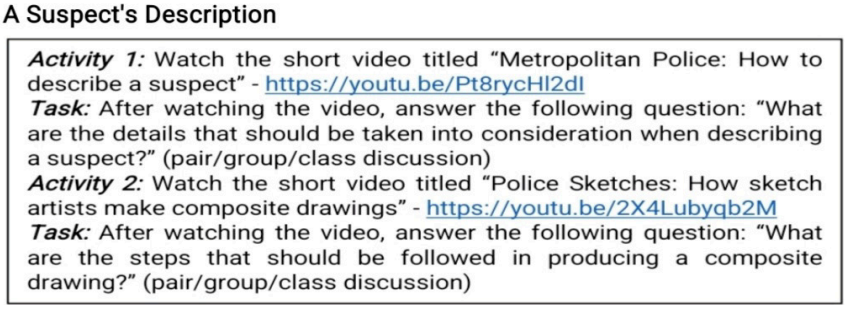
Figure 3. *Vocabulary task 3*

Vocabulary focus - Crimes and Criminals (Pielmuş, C., 2012, pp. 112-113)
Use a dictionary and fill in the chart with the corresponding **action**, **crime** and **criminal** as in the example below.

Action (verb/verb phrase)	Crime (noun)	Criminal (noun)
to abduct	*abduction*	*abductor*
	armed robbery	
to set fire to (a building)		
		assailant
to assassinate		
	battery	
		burglar
	blackmail	
to hijack a car		
		drug dealer/trafficker
	embezzlement	
to escape/to run away		
		forger/counterfeiter
	fraud	
to gamble		
		hacker
to hijack a plane		
	hostage-taking	
		joyrider
to kidnap		
	mugging	
		pander
	perjury/forswearing	
to pick one's pockets		
		pirate
to prostitute		
	purse-snatching	
to rape		
		robber
	shoplifting	
to spy		
	theft	
		traitor
to vandalize		

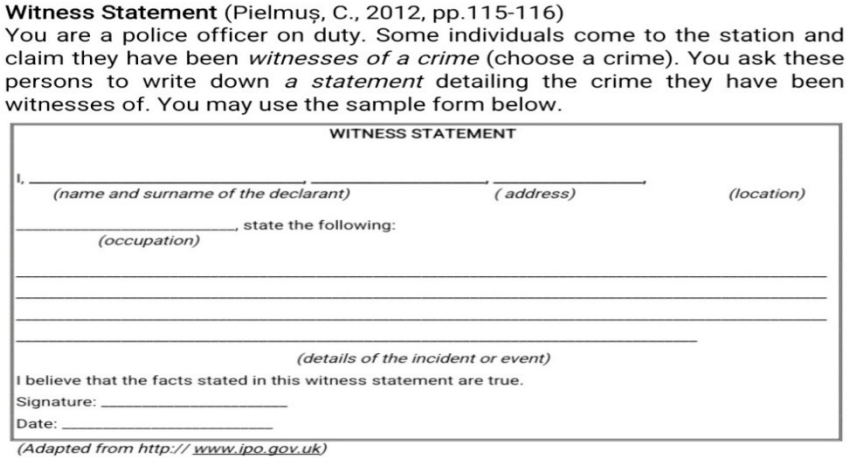
Figure 4. *Vocabulary task 4*

On the other hand, Figures 5 and 6, in turn, are centered on the practice of productive and receptive language skills, such as listening, speaking and writing. Figure 4 proposes watching and listening to two videos related to the broad topic of "Describing a Suspect in Police Work", covering two adjacent sub-topics, namely: Producing a sketch-portrait of the suspect and Compiling an accurate description of a suspect. The activity is followed up by a pair/group or class discussion prompted by a set of questions the teachers suggests, that are derived from the content of the videos. Similarly, Figure 5 suggests a writing activity, anchored in a real-life, job-related situation in police work, when police officers are either required to write police reports or take witnesses' or victims' statements. The task is based on a scenario given by the teacher and a sample form for a witness statement and the students are asked to produce a written statement of a witness of a crime following a specific scenario.


A Suspect's Description

Activity 1: Watch the short video titled "Metropolitan Police: How to describe a suspect" - https://youtu.be/Pt8rycHl2dI
Task: After watching the video, answer the following question: "What are the details that should be taken into consideration when describing a suspect?" (pair/group/class discussion)
Activity 2: Watch the short video titled "Police Sketches: How sketch artists make composite drawings" - https://youtu.be/2X4Lubyqb2M
Task: After watching the video, answer the following question: "What are the steps that should be followed in producing a composite drawing?" (pair/group/class discussion)

Figure 5. *Listening & Speaking*


Witness Statement (Pielmuș, C., 2012, pp.115-116)
You are a police officer on duty. Some individuals come to the station and claim they have been *witnesses of a crime* (choose a crime). You ask these persons to write down *a statement* detailing the crime they have been witnesses of. You may use the sample form below.

WITNESS STATEMENT

I, _____, _____, _____,
(name and surname of the declarant) *(address)* *(location)*

_____, state the following:
(occupation)

_____
_____
_____
_____

(details of the incident or event)

I believe that the facts stated in this witness statement are true.
Signature: _____
Date: _____

(Adapted from http:// www.ipo.gov.uk)

Figure 6. *Writing*

As previously discussed, mobile learning refers to the use of mobile devices as a medium of instruction via mobile applications. In an ELT environment, when teaching General English is at the forefront of the foreign language curriculum, a range of mobile apps for learning languages are available for download on any smart phone.

However, when it comes to English for Law Enforcement (LEE), the options are drastically limited in terms of language apps that can be used in class, because of a very obvious reason, which is the unavailability of ready-made, hands-on resources for teaching and learning LEE. That is why, when it comes to procedure, we resorted to the use of mobile devices in the LEE class as tools to share resources between the teacher and the students and also to access materials on the Internet. For instance, in order to share learning resources with the students, we used a communication app and an online community group for students to interact in, whereas for Internet resources, such as video and audio materials, or making use of online dictionaries, mobile devices were employed as mere information tools.

Among the advantages of smart phones as substitutes for the traditional ICT tools, such as laptops and personal computers, there are characteristics such as: portability, light weight, wi-fi or mobile data connectivity, easy access to a wide range of apps and Internet resources (visual, audio or multimedia), students' enhanced learning autonomy, as learning is not context-dependent.

Even if these advantages are tangible, from our own classroom experience, we ascertained that there are still some drawbacks of mobile devices used as a medium for English teaching and learning. One of the most prominent ones is the risk of the students' attention being diverted from the lesson to other apps on their smart phones and lose focus. Therefore, it is the teacher's job to carefully plan and design a lesson that requires the use of mobile devices, as well as to organize and time the activities effectively to prevent such situations from occurring.

Other potential disadvantages might be: the unavailability of smart phones for all students, though in the past few years this has become a very rare or isolated case, battery drain of the devices, the interdiction to carry or be in possession of a smart phone while attending classes as part of the school inner regulations, the students' being distracted by the input from other online apps, to name but a few.

3. CONCLUSIONS

Mobile learning can provide opportunities for foreign language learners to practice language skills on their devices (mobile phones, tablets etc.). For this reason, various mobile apps have been developed for the purpose of studying English as a foreign language. Moreover, mobile learning can be used both in the English class and in the students' self-study. The mobile apps for English language learning can be used both in and outside the classroom.

The fast-paced development of technology in the past decade has led to the possibility of using portable devices, such as mobile phones or tablets in the English as foreign language (EFL) class, contributing to opening the way to a technology-oriented teaching model. As the literature shows, it is a reality that students from different cultures can also learn English due to the mobility and connectivity offered by mobile devices (Kim, Rueckert, Kim & Seo, 2013).

However, a valid question arises: To what extend can mobile learning be formalized so as teaching and learning can shift from the Moodle-based virtual learning environments to mobile learning? While using the e-learning platform (Moodle Learning System), the students are able to use their mobile devices to get access to the learning resources from this platform, both in and outside the classroom. When it comes to mobile learning, even if a large array of English learning mobile apps has been developed and there is a huge potential of the foreign language learning by portable devices, what can still be a barrier for educators to put such mobile teaching into practice boils down to developing new teaching and learning methods (Kim et al., 2013). Another obstruction to implementing mobile learning consists in the fact that mobile devices are mainly a source of apps for entertainment and communication and for this reason they might be a challenge for the students' ability to self-control.

What we found out, while experimenting with mobile devices in the English for Law Enforcement class, is that mobile learning can work well if the teacher plans and organizes the technology-based lesson in advance and facilitates the interactions during the lesson so as to prevent students from using their mobile devices randomly. What's more is that only a limited number of apps can be employed in such a specific English teaching and learning environment, for communication and interaction purposes, as there are no apps available for learning English for Law Enforcement, and the teacher has to very carefully develop and select his/her own teaching resources for a class in which mobile learning is integrated.

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Virtual Foreign Language Classrooms in Tunisia: Mapping Teaching, Learning and Technology-driven Anxiety

Leila NAJEH[1]

ABSTRACT. With the onset of COVID-19, the impact on education was unprecedented, leading to the rapid shift to online learning and subsequently an upsurge in research around the anxieties associated with it. This study examines the multiple faced anxieties during the pandemic of both Tunisian university English teachers and their learners, with a foreign language learning, teaching, and technological frames. Using the Foreign Language Classroom Anxiety Scale (FLCAS), the Teaching Anxiety Scale (TCHAS), and the Computer Anxiety Rating Scale (CART), data were collected from 19 teachers and 39 students. Results showed that overall, learners and teachers experienced an average level of anxiety in virtual classrooms, and findings also show that teachers and learners experienced lower technological anxiety than expected as a result of the early introduction and integration of technology into the daily lives of Tunisians. Yet students also highlighted the continuing challenges of foreign language anxiety. These findings indicate that early technological adoption have paved the way for distance education, lightening anxiety to some extent. However, persistent foreign language anxieties among Tunisians can be attributed to the late introduction of foreign language learning, with the average starting age being 14. This age falls within a critical period when acquiring a foreign language becomes somewhat more challenging.

Keywords: Foreign language anxiety, Technological anxiety, Computer anxiety, Online learning, Tunisian Foreign language teachers and learners

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ZUSAMMENFASSUNG. Mit dem Ausbruch von COVID-19 hatten die Auswirkungen auf das Bildungswesen beispiellose Ausmaße, was zu einer schnellen Umstellung auf Online-Lernen und anschließend zu einem Anstieg der Forschung über die damit verbundenen Ängste führte. Diese Studie untersucht die verschiedenen Ängste, denen sowohl tunesische Universitäts-Englischlehrer als auch ihre Lernenden während der Pandemie ausgesetzt waren, und zwar unter den Aspekten des Fremdsprachenlernens, des Lehrens und der Technologie. Mithilfe der „Foreign Language Classroom Anxiety Scale" (FLCAS), der „Teaching Anxiety Scale" (TCHAS) und der „Computer Anxiety Rating Scale" (CART) wurden Daten von 19 Lehrern und 39 Studierenden gesammelt. Die Ergebnisse zeigten, dass sowohl Lernende als auch Lehrende insgesamt ein durchschnittliches Angstniveau in virtuellen Klassenzimmern erlebten. Weitere Ergebnisse zeigen, dass Lehrende und Lernende eine geringere technologische Angst als erwartet erfuhren, was auf die frühe Einführung und Integration von Technologie in das tägliche Leben der Tunesier zurückzuführen ist. Dennoch hoben die Studierenden weiterhin die Herausforderungen der Fremdsprachenangst hervor. Diese Ergebnisse deuten darauf hin, dass die frühe technologische Einführung den Weg für den Fernunterricht ebnete und die Angst in gewissem Maße milderte. Dennoch lässt sich die anhaltende Fremdsprachenangst unter den Tunesiern auf die späte Einführung des Fremdsprachenlernens zurückführen, wobei das durchschnittliche Einstiegsalter bei 14 Jahren liegt. Dieses Alter fällt in eine kritische Phase, in der das Erlernen einer Fremdsprache etwas schwieriger wird.

Schlüsselwörter: Fremdsprachenangst, Technologische Angst, Computerangst, Online- Lernen, Tunesische Fremdsprachenlehrer und -lerner

1. INTRODUCTION

1.1. Background of the study: Online foreign language teaching/ learning anxiety during the pandemic in Tunisia

The COVID-19 pandemic has sparked a long debate among researchers and academics across various fields of knowledge. Biologists and chemists have exerted a huge effort to explain the origin of this virus and how to prevent its spread and then provide the suitable vaccine to end it definitely. Psychologists emphasize managing generalized, social, and health- related anxiety, aiming to reduce their impact in order to prevent potential depression the quarter my cause. Meanwhile, foreign language teaching researchers are particularly concerned with the specific and state anxiety that online teaching and learning can cause, as the pandemic has significantly accelerated the shift from face-to-face instruction to distance learning (Rof, Bikfalvi, & Marques, 2022).

Before the pandemic, studies on language learning anxiety largely concentrated on learner- centered issues, especially within secondary and high school settings (Russell, 2020; Gok, Bozoglan, & Bozoglan, 2023; Yaniafari & Rihardini, 2021; Kaisar & Chowdhury, 2020). Few studies, however, addressed teacher-centered anxieties. According to Medgyes (1994) "whereas books and articles on anxiety in language learning are in abundance, there is hardly anything written about 'the sickness to teach' foreign languages. This is a regrettable fact, considering that anxiety-ridden teachers are likely to raise students' anxiety levels too" (p.50).

1.2. Research purpose

This research seeks to investigate the level of anxiety experienced by Tunisians teachers and learners of English in virtual classroom during the COVID-19 pandemic, considering both traditional sources of foreign language anxiety, as identified by Horwitz, Horwitz and Cope (1986) and the emerging technological and computer-related anxieties.

1.3. Research questions

Q1: What forms and levels of anxiety did Tunisian Teachers and students of English experience when they shifted to virtual education during the COVID-19 pandemic?

Q2: Is there a correlation between the forms of anxiety (learning, teaching, technology, and computer anxiety) and their intensity among teachers and leaners in online foreign language learning?

1.4. Hypotheses

Hypothesis for Q1: In Tunisia, online English teachers and learners experienced different levels and forms of anxiety during the pandemic including foreign language learning and teaching anxiety, technological and computer anxiety, as well as social and generalized anxiety brought on by the pandemic.

Hypothesis for Q2: There is a significant correlation between the different forms of anxiety and their intensity among online English teachers and learners in Tunisia. This hypothesis is grounded in Bandura's Social Learning Theory (1977), which emphasizes the impact of environmental, cognitive, and behavioral factors on learning, and the Transactional Distance Theory (Moore, 1993), which highlights the psychological and communicative gaps in online education. Together, these theories suggest that the forms and intensity of

anxiety - such as foreign language anxiety, technological anxiety, and social anxiety -interact in complex ways to shape the experiences of Tunisian online teachers and learners in foreign language learning.

2. THEORETICAL BACKGROUND: ANXIETY IN FOREIGN LANGUAGE LEARNING VIRTUAL CLASSROOM DURING THE PANDEMIC

During the pandemic period, in the realm of foreign teaching/learning, anxiety is deeper than ever due to the fact the teacher and learners have experienced four types of anxiety as shown in the following figure:

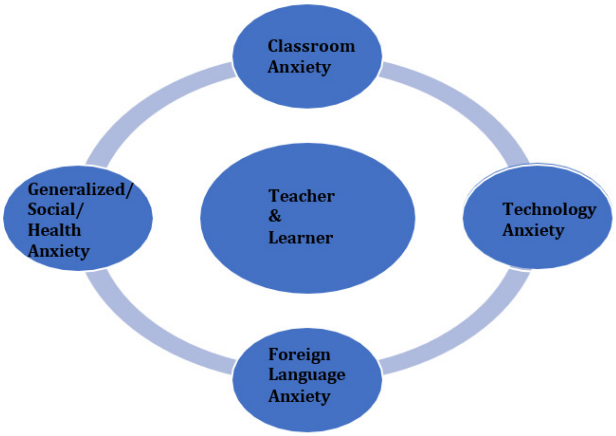

Figure 1. *Forms of Anxiety in Virtual Classrooms During the COVID-19 Pandemic*

1.5. Anxious foreign language learners

Horwitz et al (1986) were pioneers in addressing anxiety as a key research issue in foreign language classroom. They provided a commonly recognized definition of this psychological phenomenon, describing it as "a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (p. 128). Furthermore, they distinguished three key factors contributing to foreign language learners' anxiety: communication apprehension, test anxiety, and fear of negative evaluation. More importantly, they developed the Foreign Language Classroom Anxiety Scale (FLCAS), which serves to measure this form of anxiety as a quantitative variable. Going further, Arnaiz and Guillén (2012), differentiated between three

levels of anxiety: Low, Moderate, High, determined the relationship between FLA and gender, age, grade and language level. In the same vein, MacIntyre and Gardner (1991) and Spielberger (2010), agreed that anxiety is not a fixed trait but can fluctuate depending on various factors, such as the learning environment, task type, and personal life circumstances. While some learners may consistently experience low, moderate, or high anxiety, others may move between these levels depending on the situation.

2.2 Anxious foreign language teachers

Mercer (2018) defined foreign language teaching anxiety as the negative emotions experienced by non-native foreign language teachers, often resulting from their perceived low language proficiency or self-efficacy, rooted in their own language learning experiences, because before becoming teachers, foreign language instructors are fundamentally learners themselves. According to Mercer, this anxiety is a continuation of the anxiety felt during language learning. Similarly, Horwitz (1996) suggests that foreign language teachers experience classroom anxiety because they are also language learners. Aydın (2016) defines foreign language teaching anxiety (FLTA) as "an emotional and affective state where a teacher feels tension due to personal, perceptual, motivational, and technical concerns before, during, and after teaching activities" (p. 639). While Mercer, Horwitz, and Aydın share a general understanding of anxiety, Aydın (2016) challenges Horwitz's (1996) view, arguing that teaching anxiety and learning anxiety are distinct. According to Aydın, anxiety in the teaching context arises from different factors than in the learning context (p. 629). While foreign language learning anxiety is commonly associated with communication apprehension, test anxiety, and fear of negative evaluation (Horwitz et al., 1986), foreign language teaching anxiety has other sources. These include a lack of confidence and knowledge (Kim & Kim, 2004; Kralova & Tirpakova, 2019), difficulties related to student profiles, teaching procedures, under-preparation, and classroom management (Liu & Wu, 2021), inadequate preparation (Sinclair & Nicoll, 1981), and fears of failure, making mistakes, or using the mother tongue in the classroom (İpek, 2016).

2.3. Technological anxiety & computer anxiety

Technology anxiety stands for the negative feelings —like apprehension, fear, or aggression — that people often feel when using technology (Weil & Rosen, 1995). This term covers a range of anxieties, including those related to computers and the internet, and describes how much users may struggle with or fear using technological devices (Adenuga, Olusegun & Adebayo, 2019). Anxiety and a lack

of confidence in using e-learning systems classify teachers as having technology anxiety (Lee & Xiong, 2018). Such feelings can be further worsened by the constant and rapid changes taking place in technology today (Cascio & Montealegre, 2016). Hence, to alleviate technology anxiety, teachers must remain informed about ongoing changes in technology to prevent more stress.

Because the pandemic was sudden, the Tunisian teachers were obliged, in most cases, without adequate training and preparation on online teaching and with inadequate knowledge about this mode of education, to commence teaching while most of the learners have never experienced distant learning (Bel'kiry, 2022).

Apart from the anxiety related to online foreign language classes, both teachers and learners faced generalized, social, and health anxiety during the pandemic. Stein and Sareen (2015) define generalized anxiety as a persistent worry about personal and family safety, uncertainty about the future, and the impact of a global crisis. During the COVID-19 pandemic, fear of infection and the heightened unpredictability of events gave rise to this anxiety. Social anxiety also increased due to prolonged social isolation and the stress of refitting into in-person to person interactions. Research reflects that people developed anxiety due to social contact, either because of their fear of contamination or as a result of violating quarantine rules (Pakpour & Griffiths, 2020; Mamun & Ullah, 2020). Besides, COVID-19 amplified health anxiety due to excessive preoccupation with the risk of infection amongst many (Thombs, Ho, & Hwang, 2020).

3. METHODOLOGY

3.1. Participants

In order to explore the atmosphere of a virtual foreign language classroom, learners and teachers engaged in learning behind the screen were targeted.

Nineteen Tunisian university teachers at faculties and high institutes showed an average teaching experience ranging between 1 and 10 years, and thirty-nine students of English language, aged between 20 and 30, participated in completing three questionnaires.

3.2. Instrument

To answer the research questions and test the hypotheses, three Likert scale questionnaires were directed to the participants, each corresponding to one of the three forms of anxiety presented in the theoretical section: foreign

language learning anxiety, foreign language teaching anxiety, and technology anxiety. The first questionnaire, the Foreign Language Classroom Anxiety Scale (FLCAS), targeted learners and consisted of 33 items adapted from Horwitz et al. (1986). The second questionnaire, the Teaching Anxiety Scale (TCHAS) developed by Parsons (1973), included 29 items directed at teachers. The third questionnaire, the Computer Anxiety Rating Scale (CART), comprised 19 items developed by Heinssen, Glass, and Knight (1987) was aimed at both learners and teachers. All items across the three questionnaires were designed to reflect negative attitudes and emotions, utilizing a common scale that ranged from "never" to "always".

4. FINDINGS & COMMENTS

4.1. Descriptive analysis of anxiety level among teachers and students in virtual classroom

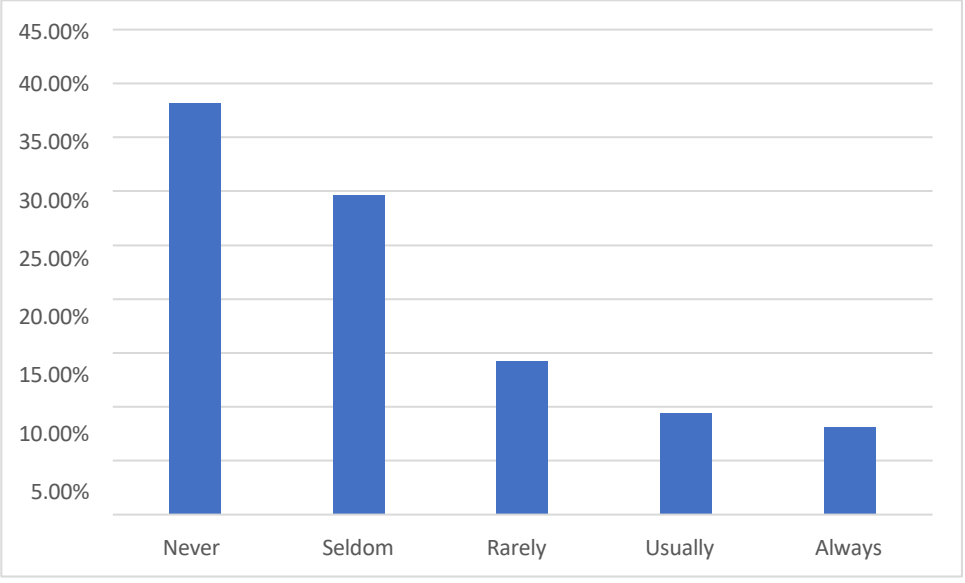

Figure 2. *General Level of Anxiety in Virtual Foreign Language Classrooms*

The figure above addresses the first research question regarding the types and the levels of anxiety experienced by online Tunisian teachers and students of English during the pandemic.

The majority of answers are negative, represented by the categories "Never" and "Seldom" (38.23% and 29.68%, respectively), show low levels of anxiety and generally maintain positive attitudes toward online learning.

This finding entails that both students and teachers experience moderate anxiety in virtual classroom. This preliminary result aligns with conclusions drawn from other studies.

Study 1: Ascribed to Bensalem (2017), investigated levels of Foreign Language Anxiety (FLA) among Tunisian trilingual students in traditional classrooms. Participants in Bensalem's research, reported moderate levels of anxiety. A comparison between the findings of the two studies reveals a discrepancy and a surprise: students and teacher experience greater anxiety in real classroom than in virtual one. It follows that technology has transitioned from being a source of stress in foreign language learning to a facilitator, fostering a more positive and comfortable learning environment, which explains why Tunisian students of English not only feel comfortable with the integration of technology into their learning experiences but also benefit from it.

Study 2: Conducted within the Tunisian context and targeting the same population, explored anxiety levels among Tunisian students of English, revealing a low level of anxiety (Bel'kiry, 2022). Considering the gap between the two studies (2022 & 2024), the consistent finding of low anxiety levels among Tunisian students implies a degree of stability and constancy in their comfort with online learning. The longitudinal perspective provided by these two studies indicates that Tunisian English language learners' comfort levels in online environments remain relatively stable over time, reinforcing the notion that their positive attitudes and low anxiety persist across time. As a result, it is plausible to conclude that Tunisian English students consistently experience low levels of anxiety when learning online.

Study 3: Conducted by Russell (2020), found that despite the widespread fear and anxiety the pandemic caused, surprisingly, anxiety levels among online learners significantly decreased, while anxiety levels tended to remain high among face-to-face learners. This may be attributed to the lack of direct contact between students and teachers, as this direct interaction often intensifies anxiety. Comparing the current study's findings, which show low levels of anxiety among Tunisian English students in online learning, to those of Russell (2020) from other developed countries, suggests that Tunisian students can compete with their counterparts in developed nations in terms of technology use and online learning.

4.2. Sources of Anxiety in Virtual Foreign Language Classroom

Table 1. *Frequency and Intensity of Foreign Language and Technology-Related Anxiety Among Teachers and Learners*

		Never	Seldom	Rarely	Usually	Always	Mean	St.D
Foreign language anxiety	**Teachers**	27.17%	26.37%	18.55%	15.68%	12.23%	20.60	5.03
	Learners	26.10%	22.64%	19.50%	16.67%	15.09%	20.00	3.39
Technology and Computer anxiety	**Teachers**	48.70%	36.80%	8.92%	2.97%	2.60%	19.80	17.21
	Learners	51.28%	33.33%	10.26%	2.56%	2.56	20.00	16.43

The table above exhibits the findings pertaining to the second research question, which explores the relation between anxiety levels and various types of anxiety experienced by online teachers and learners, and confirms the hypothesis that there are variations in anxiety levels related to learning, teaching, and technology among Tunisian English teachers and learners.

The findings show that foreign language anxiety remains more prevalent than technology anxiety for both Tunisian English teachers and learners. Teachers exhibit a range of foreign language anxiety responses, with approximately 27.17% indicating they "Never" experience this anxiety, followed by smaller groups in the "Seldom" (26.37%) and "Rarely" (18.55%) categories. A mean score of 20.60 and a relatively low standard deviation of 5.03 suggest moderate and fairly consistent anxiety levels. Learners display similar responses, with 26.10% reporting they "Never" experience foreign language anxiety. The distribution slightly decreases across categories but shows less variability than teachers, with a mean of 20.00 and a lower standard deviation (3.39), indicating that learners' foreign language anxiety is relatively stable across individuals. One possible explanation for the higher levels of language anxiety, as compared to technology anxiety is that the participants in this study generally began learning English around the age of 14, which falls beyond the critical period often associated with language acquisition ease. According to Lenneberg (1967) and Krashen (1982) learning a foreign language after this critical age can increase the likelihood of anxiety and challenges in the same direction Dewaele (2007) and Thompson and Lee (2013) assume that individuals who begin learning a foreign language at an earlier age tend to experience lower levels of anxiety. Secondly, the limited perception of English as a language for

everyday use in Tunisia (Melliti, 2008) contributes to higher levels of language anxiety among students. MacIntyre and Gardner (1994) believe that limited exposure outside the classroom can restrict students' confidence and spontaneous use of the language, which increases anxiety in formal settings where they are expected to perform well.

Teachers exhibit a moderate average level of technology anxiety (mean of 19.80%), yet with a high standard deviation of 17.21, reflecting significant variability. This suggests that while some teachers experience acute technology anxiety, others feel it minimally or not at all. Similarly, learners display moderate technology-related anxiety (mean of 20.00%) with considerable variation (SD = 16.43), indicating differing levels of comfort with technology in educational settings. The low and moderate levels of technology anxiety among teachers and learners as well, can be attributed to two main factors. First, Tunisians' extensive use of technology in daily activities - such as online shopping, booking services, and digital communication (Toumi, 2016) - has reduced their anxiety in educational technology use. Previous researches (Hennessy, Ruthven & Brindley, 2005; Liu & Szabo, 2009), have affirmed that consistent exposure to technology boosts user comfort and proficiency and thus attenuating the level of anxiety. Second, the learners who participated in this study, aged between 20 and 30, benefited from early and consistent exposure to digital tools, given that Tunisia has had internet access since 1998 and that the mean age for initial exposure to technology among children is approximately five years (Ministère des Technologies de la Communication, 2020). Thus, early use of technology fosters comfort and proficiency among young Tunisian learners, reinforcing existing ideas that familiarization with digital tools at an early age can reduce anxiety when these tools are used in the educational process. Psychological research also supports the notion that early exposure to a new phenomenon helps reduce the anxiety it may cause (Caplan, 2007; Chua, Chen, & Wong, 1999).

5. CONCLUSION

The present research sought to investigate what levels and types of anxiety, including both traditional sources of foreign language anxiety and the emerging technological and computer- related anxieties among Tunisian teachers and learners of English during the COVID-19 pandemic. The results indicate that the impact of all three types of anxiety was relatively mild in both groups; the level of technological anxiety was to a certain extent kept down as a consequence of the omnipresence of computers and other devices which helped the students to adjust to studying online. But students' anxiety about learning foreign languages, especially, is still a bigger concern.

The mild degree of anxiety experienced by both teachers and learners is a striking difference from earlier studies that identified higher anxiety levels in conventional face-to-face teaching classes. This indicate that the virtual classroom even with its shortcomings provides learners a less demanding environment where learners who are relatively shy when it comes to social interaction would benefit from the reduced pressure that comes with online learning. In addition, the results emphasize the significance of having utilized technology at a young age as a factor to lessen technology-related anxiety, and corroborates studies that associate earlier use of technology with higher comfort and skill. However, Tunisian English language students attest, language learning anxiety continues to be a hurdle in foreign language learning due to the fact that in Tunisia students start learning English later in life and do not use it in everyday situations.

It follows that even if technological anxiety did not become the main source of stress during the pandemic, the results underline the relevance of foreign language anxiety in the Tunisian context. The study calls for further exploration of the interplay between different types of anxiety and suggests that addressing language-specific anxiety through targeted pedagogical strategies could significantly enhance the effectiveness of online foreign language teaching and learning in Tunisia. Moreover, the long-term integration of technology in education should be accompanied by strategies to alleviate both technological and language-related anxieties, ultimately fostering a more supportive and effective learning environment for both students and teachers.

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