LUX VERA

HRVATSKO KATOLIČKO SVEUČILIŠTE ZAGREB
UNIVERSITAS STUDIORUM CATHOLICA CROATICA ZAGRABIA

Brain and Mind: Promoting Individual and Community Well-Being

Selected Proceedings

2nd International Scientific Conference
Department of Psychology, Catholic University of Croatia
12th – 14th December 2019

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Contents

Foreword by the Editor

For the second time, the Department of Psychology of the Catholic University of Croatia organized an international scientific conference, aimed at the education and training of psychologists and experts in related professions. The conference entitled "Brain and Mind: Promoting Individual and Community Well-Being" took place at the Catholic University of Croatia from 12th to 14th December 2019 and gathered about 570 registered participants, which indicates the current relevance of the topic.

The program included 290 active participants from Croatia and abroad (Italy, the United States, Germany, Slovenia, the United Kingdom), who submitted 147 presentations, independently or in co-authorship. The programme consisted of 4 invited lectures, 2 round tables, 9 workshops, 8 symposia, 53 oral presentations and 41 poster presentations. It was our great pleasure that psychology students from the Catholic University of Croatia and the Università Cattolica del Sacro Cuore in Milan, as well as PhD students from Humboldt University of Berlin actively participated in the programme. The invited lecturers considerably enriched the conference programme so it has to be mentioned that the lecture "How New Technologies Affect Our Lives and the Lives of Our Children" was held by prof. Manfred Spitzer from Ulm University, Ulm, Germany, "The Psychology of Sustainable Eating" by prof. Werner Sommer from the Institute for Psychology of the Humboldt University of Berlin, Germany, "How to Build and Strengthen Resilience: Lessons from Cognitive and Brain Sciences" by Nansook Park from the University of Michigan, Ann Arbor, USA and "Brains 'N' Booze: Acute Cognitive Neurodynamics and Neuroadaptation to Heavy Use" by prof. Ksenija Marinković from San Diego State University and the University of California, USA. During the programme, the Croatian translation of one of the new books by prof. Manfred Spitzer's "Loneliness" was presented.

Our goal was to provide some guidance in the area of diagnostics, therapy and rehabilitation of individuals with brain damage, developmental, and other difficulties, and to provide assistance and support to their families and to the wider community. We wanted our university to be the place where we could share our experiences and examples of good practice, scientific and professional knowledge, and discuss many open issues and I hope we succeeded. Therefore, we sincerely thank everyone who showed an interest and decided to participate in the conference.

The conference is the result of the joint efforts of all members of the Programme and Organizing Committee, with the selfless assistance from the ad-

ministrative staff of the Catholic University of Croatia, as well as our psychology students, to whom I wish to express our gratitude. I would like to thank the members of the Editorial Board as well as our reviewers – due to the blind review process their names are listed in alphabetical order at the end of this Book of Selected Proceedings. Finally, I would like to express our gratitude to the Catholic University of Croatia for recognizing the importance of publishing the books of selected proceeding as well as financing the publication of this book.

Ljiljana Pačić-Turk, Editor-in-Chief

Original scientific paper

Brain and Mind: Promoting Individual and Community Well-Being
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The relation of parental mediation of children's digital media use, parental digital skills and parents' education with preschool children's digital skills

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Abstract

The aim of this paper was to examine the relation of parental mediation of children's digital media use, parents' education level and digital skills with preschool children's digital skills. Participants in the study were 97 parents (81 mothers) of preschool children (mean age 6.5 years).

Parents completed a questionnaire containing scales assessing their own and their children's behaviours, habits and skills related with digital technolo-

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gies and questions on parents' and family's sociodemographic characteristics. Parental mediation of children's use of digital media was assessed using a Parental mediation scale, constructed for the purpose of the study based on previous research (Nikken & Jansz, 2013; Nikken & Schols, 2015). Parental and children's digital skills were assessed using separate scales prepared for this research on which parents gave estimates regarding their own and their child's proficiency in different digital skills.

The results show that parental mediation of children's digital media use is positively related with children's digital skills. Some parental characteristics, such as their education level and their own digital skills are significantly negatively related with both the frequency of parental mediation of children's digital media use and children's digital skills. Results of a regression analysis show that parental mediation of children's digital media use is the only significant positive predictor of children's digital skills.

These results point to the importance of parental mediation as well as their education and personal digital skills, in relation to development of children's digital skills.

Keywords: parental mediation, digital media, digital skills, preschool age

Introduction

In the majority of contemporary homes across Europe, children are surrounded by digital media of all sorts from the earliest age. In that context, parents struggle to understand the positive and negative outcomes of their children's digital media use, and at the same time to regulate their children's use of such media. In exploring the ways in which children can use digital media to increase online opportunities and at the same time avoid the risks, research points to the importance of children's digital skills, i.e., various skills that are necessary for using digital media independently (Buijzen & Valkenbur, 2005; Rodriguez-de-Dios, van Oosten & Igartua, 2018).

An important research question is what specific digital skills preschool children possess and from whom they attain them. In Croatia, the use of digital media is not covered in any way in official kindergarten curricula, and in fact in some towns all types of digital media in kindergartens are forbidden. This means that preschool children's use of digital media is limited almost exclusively to the home and family environment, leaving their parents and other family members as primary instructors of digital skills. Research from other countries shows that even if this is not the case, parents still often believe their role regarding their children's internet behaviour is more pronounced when compared to the role of teachers (Valcke, Schellens, Van Keer, & Gerats, 2007). With parents being primary guides in children's use of digital media, it is important to consider how their characteristics, such as their education level and their own digital skills and their behaviours, for example their mediation

of their children's digital media use, are related to their children's digital skills. Hence, the aim of this study is to examine the contribution of parental mediation of children's digital media use, their education level and their own digital skills in predicting their children's digital skills.

Warren (2001, p. 212) defines parental mediation as "any strategy parents use to control, supervise or interpret media content for children". When it comes to parental mediation of the child's digital media use, parents differ in the types of strategies they use as well as in the frequency of their application (Nikken & Schols, 2015). Research on parents' mediation of media use started with studies on television viewing and video game playing. These studies confirmed three types of parental mediation: restrictive mediation, active mediation and co-use of media (Nikken & Jansz, 2006). Use of other new digital media devices brought changes in the way family members use these media, with more solitary use compared to earlier joint television watching (Kennedy & Wellman, 2007). Although research at first confirmed that the same types of mediation of television watching and video game playing could be applied to Internet use, with some modification (Nikken & Jansz, 2006), it soon became clear that research on the mediation of children's Internet use should be expanded (Livingstone & Helsper, 2008). Digital media used today are different from watching television – they are more mobile, more technologically complex, more interactive, they allow multitasking and children are more proficient in their use because they use them from early age. Livingstone and Helsper (2008) define five specific parental mediation styles: active mediation, restrictive mediation, co-use, monitoring and supervision. On the other hand, Livingstone et al. (2017) describe two basic parental mediation strategies for parents of 6- to 14-year old children. One is the enabling mediation, characterized by increased online opportunities as well as risks, and the other is restrictive mediation, characterized by fewer online risks, but also less learning opportunities.

All these studies show that parental mediation of children's use of digital technology refers to diverse parental practices aimed at regulating children's interactions with digital media. But some researchers point to a lack of descriptive data regarding frequency of parental mediation behaviours in general (Piotrowski, 2017) and its relation to different outcomes in children. It is still unclear to what extent parents of young children engage in parental mediation of digital media use in general, especially since it had been documented that specific practices differ regarding the age of children (Livingstone & Helsper, 2008; Kirwil, 2009). Therefore, the aim of this research is to investigate the relationship of frequency of parental mediation in general, regardless of the type of mediation to digital skills in preschool children.

Preschool age is especially important for research on parental mediation of digital media use because young children's interactions with digital media are continuously changing (Ofcom, 2019), and there are more and more devices as well as content that are targeting younger age groups. Also, children go on-line at an earlier age than ever before (e.g., Ofcom, 2019). Finally, at this age, parental mediation strategies are probably more effective than in older age groups, because parents are still regarded as authority figures who should be obeyed in this matter (Nikken & Jansz, 2006). Research shows that more parental mediation of digital media use reduces the effects of advertising on children (Buijzen & Valkenburg, 2005), reduces the likelihood of children experiencing content risk online (Kirwil, 2009) as well as the likelihood of online victimization (Navarro, Serna, Martínez, & Ruiz-Oliva, 2013). Research with adolescents found that digital skills mediate the relationship between some types of parental mediation and online risks and opportunities (Livingston & Helsper, 2010). Data on digital skills of younger children are quite scarce, but research shows that there is a positive correlation between all types of parental mediation and children's digital skills in young children (0-7) (Nikken & Schols, 2015). Hence, it can be expected that more frequent parental mediation of children's digital media use will contribute positively to the development of children's digital skills in the preschool period.

Research shows that higher-educated parents use less technical restrictions of children's digital media use (Nikken & Schols, 2015) and find it easier to guide their children's use of digital media than lower-educated parents (Ito et al, 2010). Gui and Argentin (2007) showed that family education level is associated with small differences in the level of digital skills in high-school students. Also, parents who regard themselves as efficient in the use of the Internet show more confidence in their skills of managing children's use of digital media (Livingstone et al., 2011; Cheung, 2010). Thus, it can be expected that higher parental education level and better digital skills will contribute positively to their children's digital skills.

Method

Participants and procedure

Participants in the study were a convenient sample of 97 parents (84.5% mothers) of children aged from 6 to 7 years. The average age of mothers was 39 years (from 27 to 57 years) and the average age of fathers was 41 years (from 30 to 57 years). Most parents were employed (80.2% of mothers and 92.2% of fathers). As for the educational level of mothers and fathers, the majority of

mothers had attained some form of graduate or post-graduate degree (53.3%), a smaller number had completed high school (44.6%), and the smallest portion of mothers had completed primary school (2.2%). Most fathers had completed high school (61.5%), a smaller number had attained some form of graduate or post-graduate degree (34.1%), and the smallest portion of fathers had finished primary school (4.4%).

The data used in this paper are collected within the research project "The relationship of digital media use and home literary environment to preschool children's language skills", funded by the Institute of Social Sciences Ivo Pilar. Parents from three schools located in Osijek were approached by a school psychologist when they came to enrol their children in the first grade of primary school. Investigators explained the purpose of the project to the parents and those who decided to participate (approximately 90% of contacted parents) signed the consent form, and while they waited for their children to be tested for school readiness, parents filled out the questionnaire.

Measures

Parental mediation of children's digital media use was measured using 20 items constructed for the purposes of the project study based on existing instruments (e.g., Nikken & Jansz, 2013; Nikken & Schols, 2015). Parents reported the use of different mediation strategies, behaviours, and actions (e.g., *How often do you talk to your child about strangers on the Internet?*; *How often do you explain to your child how long he or she can use digital devices?*) on a five-point scale (1 - *never*, 5 - *very often*). For the purpose of the present study, all the items were summed into a total score (Cronbach $\alpha = .72$), with higher scores indicating more frequent parental use of different mediation strategies and behaviours with their child.

Parents' digital skills were measured with three items that reflect parental use of a computer, the internet, and different digital services. Parents reported how good their digital skills are on a five-point scale (1 - *very bad*, 5 - *excellent*). The items were summed into a total score (Cronbach $\alpha = .88$), with higher results indicating better digital skills.

Children's digital skills were assessed using 18 items. The items were formulated based on previous qualitative research conducted in Croatia (Kotrla Topić & Perković Kovačević, 2017) and on the DIGICOMP framework for assessing digital skills in adults (Ferrari, 2012). The items describe different skills and abilities to use digital media (e.g., *My child can find some content on the internet by himself, My child knows how to take photos, My child knows how to initiate software updates for the application or game he/she uses*). Parents rated how well these items describe their children's digital skills on a four-point scale

(1- *it does not apply to my child at all*, 4 - *it applies to my child completely*). All the items were summed into a total score (Cronbach α = .80), with higher scores indicating better children's digital skills.

Mother's and fathers' education level was assessed using a three-point scale: 1 - *completed primary school*, 2 - *completed high school* and 3 - *graduate or postgraduate degree*, and parents also reported on their age as well as age and sex of their child.

Results

Parents on average rate that they sometimes mediate their children's digital media use ($M = 2.81$, $SD = 0.65$). They on average rate their own digital skills as very good ($M = 4.10$, $SD = 0\ 0.96$) and rate that their child mostly possesses the described digital skills ($M = 2.90$, $SD = 0.50$).

Correlations among study variables are presented in Table 1. Children's digital skills are positively related to parental mediation of children's digital media use and negatively related to mothers' education level. Parental mediation of children's digital media use is negatively related to mothers' and fathers' education level. Parents' digital skills are positively related to mothers' and fathers' education level.

The results of regression analysis with children's digital skills as a criterion variable and parents' education level, parental mediation of children's digital media use and parent's digital skills as predictor variables are presented in Table 2. The results of the regression analysis show that 17.4% of the variance of children's digital skills can be explained based on the used set of predictor variables. Parental mediation of children's digital media use was the only significant predictor of children's digital skills. Overall, the results show that more

Table 1. *Intercorrelation among study variables*

	1.	2.	3.	4.
1. Mothers' education level	–			
2. Fathers' education level	.306**	–		
3. Parental mediation of children's digital media use	-.216*	-.213*	–	
4. Parents' digital skills	.353**	.209*	.097	–
5. Children's digital skills	-.212*	-.190	.371**	.045

Note. *$p < .05$; **$p < .01$.

Table 2 *Regression of children's digital skills on parents' education level, parental mediation of children's digital media use and parent's digital skills*

	Children's digital skills		
	β	*t*	*p*
Mothers' education level	-.123	-1.105	.272
Fathers' education level	-.092	-0.857	.394
Parental mediation of children's digital media use	.335	3.165	.002
Parents' digital skills	.045	0.413	.681
	$R = .417$		
	$R^2 = .174$		
	$F(4,84) = 4.42; p = .003$		

frequent parental mediation of children's digital media use positively contributes to preschool children's digital skills.

Discussion

The aim of this research was to examine the contribution of overall parental mediation of children's digital media use, their education level and their own digital skills in predicting their preschool children's digital skills.

Overall, our results show that the only significant predictor of preschool children's digital skills is parental mediation of children's digital media use. Specifically, children whose parents more frequently apply parental mediation have better digital skills. This confirms the importance of parental mediation for the development of children's digital skills, which have been found to be important in mediating online risks and opportunities. Since, as mentioned before, children in the sample have no way of gaining digital skills in kindergarten, we can assume they gain their knowledge from their parents and caregivers. It seems that when parents are involved in their children's digital media use by mediating their activities, they also expand their children's knowledge on the use of digital media. Some researchers believe parents educate their children both intentionally and unintentionally (Notten & Kraaykamp, 2009), meaning that by mediating their children's use of digital media parents might not always need to give direct instructions about the use of such media, but might also serve as an example of their use. This finding indicates that the ways in which parents manage their children's use of digital media in terms of setting rules regarding time and content, but also talking to their children about

the ways in which these media can be used and offering help if problems occur, is more important for the development of children's digital skills than parental education or their own digital skills. Other research supports these findings, showing that parents through their conversations with children about online activities and co-use of devices help children improve their digital skills and reduce their risk of exposure to inappropriate content (UNICEF, 2019).

As for parental education level, our results show that mothers' education level is negatively related to children's digital skills, and mothers' and fathers' education level are negatively related to parental mediation of children's digital media use. At first these results might appear surprising, because it would be reasonable to expect that more educated parents would be more aware of the potential risks as well as opportunities of digital media use (Notten & Kraaykamp, 2009), which might lead to more mediation of their children's digital media use, and finally to children's better digital skills. But in fact, previous research shows that parents of children aged 2 to 12 who have a lower level of education apply more active mediation and set more content restrictions (Nikken & Jansz, 2013), or that they apply more restrictive technical mediation (Sonck, Nikken, & de Haan, 2013). Same research also shows that parents who have concerns about online risks apply all types of mediation more often (Nikken & Jansz, 2013). Therefore, a possible explanation for the results from this study might be that parents with a higher education level might have a less negative perception of digital media or fewer concerns about possible risks, which might lead to less mediation of their children's digital media use and lower digital skills of their children. Children of parents who restrict their children's use of digital media more, have less opportunities to learn about the use of these media, but they also have lower risk of exposure to problematic contents (Livingstone et al., 2017). Another possible explanation is that parents with higher education level limit their children's screen time more, which then leads to less opportunities for parental mediation and less opportunities for development of digital skills.

Our results additionally show that parents' digital skills are positively related to mothers' and fathers' education level, meaning that more educated parents tend to have better digital skills. It would perhaps be reasonable to expect that better digital skills in parents might also be positively related with their children's digital skills, because previous research shows that low levels of media literacy in parents lead to less opportunities for their children to develop digital skills (Hogan, 2012), but we found no such correlation in this study. Again, a possible explanation could be that parents with better digital skills limit their children's screen time more, which limits children's opportunities to develop their digital skills.

We might also expect parental digital skills to be positively related to their mediation of children's digital media use, but such a relationship was not found in this research. In a study of 2.579 families with children aged from 6 to 17, Cheung (2010) found that parents' internet knowledge had an important impact on their satisfaction with supervising and guiding their child's use of internet. This shows that further research is needed on the relationship of parental digital skills, their satisfaction with those skills and their confidence in their mediation skills, with their actual mediation of children's digital media use, both regarding type of mediation and its extent.

This research is not without shortcomings. The use of a small and convenient sample with predominantly highly educated parents and mostly mothers unable us to generalize our findings to parents and families of different characteristics. Further research should include more representative samples of participants and should focus on specific types of parental mediation of children's digital media use and its relation to children's digital skills in preschool age. Due to the small sample size, the results of factor analyses of parental mediation and children's digital skills measures were not valid guidelines for forming results on the measures in any other way than the overall result. Thus, future research should further examine psychometric characteristics of the used measures, and re-examine the findings of this study. Also, we suggest additional research aimed at deeper understanding of both parental and children's digital skills, using scales with more items that target more specifically age-related skills.

Conclusion

Digital skills involve various skills that are necessary for using digital media independently. They include knowledge regarding how to, for example, use a device to take a photograph or create a video, and even share the material with others, how to install software, find specific content on the Internet, etc. Digital skills differ from digital literacy, with the latter being a broader term including critical thinking about the use of digital media – the advantages it provides over other ways of learning and the possible negative impact it can have on the user (Süss, 2001). In preschool age it is difficult to assess digital literacy skills, since this would require participants to self-report about their personal views of digital media use, so most research on this construct focuses on adolescents or young adults. Therefore, in preschool age, researchers focus on digital skills which are assessed by parental reports. Research finds that parents often overestimate these skills in their children, considering them to be digital natives who use digital media intuitively and with great ease (Vittrup, Snider, Rose,

& Rippy, 2014). Results from this study clearly point to the importance of parental mediation of children's digital media use in preschool age for the development of children's digital skills. The question remains about how to help parents mediate their children's digital media use, and how to further support the development of children's digital skills as well as digital literacy.

Author Disclosure Statement

All authors declare that they have no conflicts of interest.

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Original scientific paper

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Correlates of video game addiction

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Abstract

Background and Aims. Video games-related research has grown rapidly during the last few decades. Although many positive aspects of playing were reported, emphasis is being put on the negative effects of playing video games, focusing on understanding how video game addiction develops and how it affects a person's everyday life. The aim of the research was to test the predictive value of traits of dark triad, self-esteem, and flow, alongside sex, in the explanation of video game addiction.

Methods. Research was conducted anonymously via e-questionnaires in December 2018 and was open to all video game players. We surveyed 426 Croatian video game players (males = 73%), the age range was 17 to 63, and the mean age was 24.7 (SD = 6.11). All participants engaged in video gaming at least one hour a week. The following instruments were included in the questionnaire: Short Dark Triad Scale, Rosenberg Self-Esteem Scale, Flow Short Scale and Croatian version of Game Addiction Scale for Adolescents (Lemmens, Valkenburg & Peter, 2009).

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Results. A total of 27% of variance of video game addiction was explained using flow, sex and psychopathy as positive predictors, and self-esteem as a negative predictor. Flow emerged to be the strongest predictor of video game addictive behaviour.

Conclusion. The conducted research contributes to the understanding of video-game-related-addictive-behaviour, especially in Croatia where research lacks on this topic. This research showed that video game addiction tendencies can be predicted by constructs such as flow state, sex of the participants and specific personality constructs, such as self-esteem and psychopathy tendencies. However, further examination of this topic is necessary in order to gather a better understanding of overall aspects of video game addiction.

Keywords: video game addiction, dark triad, self-esteem, flow

Introduction

Video gaming related research has grown rapidly in the last decade, with statistics reporting that there are more than 2.2 billion gamers in the world (Šporčić & Glavak-Tkalić, 2018). In a research conducted ten years ago in Croatia (Bilić, 2010), 81% of children and youth reported to engage in video gaming daily, with this number likely being even higher today.

Although video gaming has some positive effects on numerous cognitive and motoric skills such as enhancing cognitive and psychomotor speed, problem solving or eye-hand coordination (Li, Chen & Chen, 2016), and some video games are primarily created as an educational tool, negative side effects of over usage are not to be neglected. Side effects of videogame over usage are often seen through aggressive and violent behaviour (Gentile, Lynch, Linder & Walsh, 2004), social isolation and showing early symptoms of addictive behaviour (Bilić, Gjukić & Kirinić, 2010).

Video game addiction, alongside computer addiction, is categorized as pathological addiction (American Psychiatric Association, 2013) where main symptoms include an uncontrollable urge for playing, loss of control, numerous withdrawal symptoms such as anxiety and irritative behavior when not gaming, preoccupation with the game, neglecting everyday responsibilities (e.g., school, family) and lying to cover up for video gaming (Young, 2009). Strong addiction risk factors are shown to be male sex, younger age (Mentzoni et al., 2011), lower self-esteem (Bilić & Ljubin Golub, 2011), and weekly gaming time (Šporčić & Glavak-Tkalić, 2018).

Up to now, various constructs had been researched within the topic of video gaming and video gaming related addictive behaviour. Constructs that we decided to include in this research to test the possible connection to video game addiction are dark triad personality traits, self-esteem, and flow.

Dark triad traits, as described in Paulhus and Williams (2002), refer to three different but highly connected personality traits – narcissism, Machiavellianism, and psychopathy. Raskin and Halls (1979; as cited in Paulhus & Williams, 2002) defined the facets of trait narcissism by the following: grandiosity, entitlement, dominance, and superiority. Machiavellianism, as the second dark triad trait, is characterized by interpersonal manipulation, unemotional coldness, and indifference to morality (Gunnthorsdottir, McCabe & Smith, 2002). Finally, psychopathy as a subclinical trait is characterized by persistent antisocial behaviour, impaired empathy and remorse, and bold, disinhibited, and egotistical traits (Jonason et al., 2012), which differs from its clinical variant of personality disorder.

Concerning previous research conducted on dark triad traits, it is noted that these personality traits are in a positive correlation with pathological internet usage, where individuals that score higher on measures of these personality traits are more prone to development of addictive behaviour in general, while also showing more impulsive, risk and excitement seeking behaviour (Jonason et al., 2012). Moreover, pathological online gaming, as a possible first step in the development of video game addictive behaviour, is in direct and indirect correlation with dark personality traits (Kircaburun, Jonason & Griffiths, 2018). Due to the previous findings that suggest a higher likelihood of developing addictive behaviour among those individuals with more pronounced dark personality traits (Kircaburun et al. 2018), this research wanted to focus on a specific type of addictive behaviour – video gaming. While differences in personality traits are proven to be in close relationship with risky social behaviour, such as pathological online gaming (Kircaburun et al., 2018) and problematic social media usage (Kircaburun, Demetrovics, & Tosuntaş, 2019), the question arises – are the same personality traits also more pronounced among those people that indulge in another type of antisocial addictive behaviour – video gaming? If true, then considering more pronounced individual characteristics as possible risk factors for video game addiction, provides a broader practical understanding of video game addiction.

On the other hand, there has been an increase in the interest of research regarding correlation between video game addiction and self-esteem, as another possible personality risk factor. The construct of self-esteem refers to both positive and negative feelings one has about the self (Bilić & Ljubin Golub, 2011). To date, researchers have mostly found a positive connection between lower self-esteem and numerous negative socio-psychological outcomes such as drug use, hostility and dysfunctional behaviour regarding close relationships (Harter, 1993). In addition, some scientists suggest a possible correlation of low self-esteem with pathological video gaming (Bilić & Ljubin Golub, 2011).

Research linking self-esteem to video game addiction shows inconsistent results depending on the research sample, indicating that connection between lower self-esteem and video game addiction is moderated by the male sex (Bilić & Ljubin Golub, 2011). Colwell and Payne (2000) found a negative correlation between self-esteem and video gaming, suggesting that participants who indulged more in playing video games were also more likely to have lower self-esteem. On the contrary, Colwell and Kato (2003) reported no such correlation in their own research. Inconsistent findings motivated us to further investigate the relationship of this construct with antisocial tendencies of video game addictive behaviour.

Finally, the construct of flow state was included as a possible predictor of video game addiction. Flow is mainly researched in the context of positive psychology, while being defined as a pleasant psychological state that occurs while a person is completely emerged in an activity (Csikszentmihalyi, 1990; as cited in Rijavec, Miljković & Brdar, 2008). However, the definition of flow includes one specific, and in the context of addictive behaviour, merely interesting characteristic which refers to losing the track of time. For being deeply focused on the current activity, individuals experiencing flow are, in a way, cut out of their surroundings, meaning that they have no information of things happening around them, and for this reason are able to engage in the current activity without having any idea of time passing while simultaneously feeling intense pleasure (Hull, Williams & Griffiths, 2013).

Research conducted by Ting-Jui & Chih-Chen (2003) showed a positive connection between lost track of time and addictive behaviour, where more than 90% of players reported losing the track of time in some part of video gaming. Accordingly, Wood, Griffiths & Parke (2007) imply that sense of lost track of time happens among high-frequency players, where it is considered the main reason for playing video games. This feeling has both positive (e.g., relaxing, reality escape) and negative (e.g., social conflict, feeling of wasted time) impact on players. Keeping in mind that video game addiction is considered an antisocial and addictive behaviour, we need to ask whether it is possible that the feeling of lost track of time, that comes with the flow state, actually promotes the escapism desire and deepens this antisocial activity among some players? This, however, might be true for those individuals that seek stress release in the virtual world, for whom achieved escapism is considered primarily a positive outcome. They are also more likely to indulge in high frequency video gaming. Hull et al. (2013) state that decreases in the overall feeling of happiness positively predict increases in gaming addiction behaviour. An important finding in this hypothesized context, is one by Esposito et al. (2020) which indicates that higher frequency and time spent playing are in a strong positive correlation

with video game addictive behaviour. For this reason, we hypothesized that flow will be positively correlated with video game addiction. However, it is important to note that merely experiencing flow during video gaming will not lead to video game addiction but might only increase the possibility of such behaviour.

The goal of the research was to test whether dark triad personality traits, self-esteem, flow state and sex of the participants successfully predict video game addiction tendencies. Based on the theoretical background and empirical research, it was proposed that video game addiction would be positively correlated with dark triad traits in a way that people scoring higher on these traits are more likely to have greater addiction tendencies to video games. Also, we wanted to explore if video game addiction would be positively correlated with flow in a way that people who experience more flow are also likely to be more addictive to video games. Furthermore, it was expected that video game addiction would be negatively correlated to self-esteem in a way that people who are less self-confident are more likely to be addictive to video games. In addition, we argued that dark triad traits and flow would be positive predictors of video game addiction, while self-esteem would emerge to be a negative predictor.

Method

Participants

Research was conducted on 429 video-game players from Croatia, of which 426 were included into the final analysis, while 3 participants turned out to be outliers on certain variables. The majority of participants were men (73%). Average age of participants was 24.7 years (SD = 6.11) and average time spent playing video games was 6 hours per week.

Instruments

Game Addiction Scale for Adolescents (Lemmens, Valkenburg & Peter, 2009) was used as a measure of video game addictive behaviour. For the purpose of this research, the scale was translated into Croatian and psychometric characteristics of the scale were examined. Originally, the scale consisted of 30 items where participants had to evaluate the amount of time they felt best described them in the last 6 months, on a scale of 1 (*never*) to 5 (*always*). Thirty items group into seven factors, or seven dimensions of video game addiction – *(1) Salience, (2) Tolerance, (3) Mood changes, (4) Reinstatement, (5) Withdrawal symptoms, (6) Conflict* and *(7) Problem*. However, factor analysis conducted on the Croatian sample resulted in a total of 19 items taken into

the final analysis which formed 4 dimensions of video game addiction. These factors are: *(1) Loss of control, (2) Videogames and feelings, (3) Videogames and time* and *(4) Gaming for a better life*. Therefore, it is evident that our factors are distinct compared to the original ones (Lemmes, Valkenburg & Peter, 2009). Total score, computed as a sum of 4 subscales, was used as a measure of videogame addiction. Higher total score indicated a higher amount of video game addictive behaviour. Cronbach alpha coefficients of internal consistency for each factor ranged from 0.79 to 0.95. Total scale reliability was 0.95.

Short Dark Triad Scale (Jones & Paulhus, 2012) was used to assess dark triad traits. The scale consists of 27 items equally distributed on 3 dimensions of dark triad personality traits – narcissism, Machiavellianism, and psychopathy. Participants had to evaluate their own agreement for each item on a five-point scale (1 = *completely disagree*; 5 = *completely agree*). The total result was formed as a linear combination of all 9 items for each dimension of dark triad personality traits. Before computing the final result for each dimension, certain items (11, 15, 17, 20, 15) had to be reverse scored. Higher final result on each subscale indicated the higher expression of a particular personality trait.

The Croatian version of *Rosenberg Self-esteem* 10-item scale (Bezinović, 1988) was used as a measure of one's positive and negative feelings about the self. Participants had to evaluate the degree each item related to them on a 5-point scale (1 = *completely inaccurate*; 5 = *completely accurate*). Result was formed as a sum of all 10 items, meaning that greater results indicated a greater amount of one's self-esteem. Scale reliability shown in this research was 0.87.

Flow Short Scale (FSS; Rheinberg, Vollmeyer & Engeser, 2003) was used in order to access one's flow experience. Originally, the scale consisted of 10 items measuring flow experience, an additional 3 items measuring perceived importance of activity, and 3 items measuring demand, skills and the perceived fit of demands and skills. On a Flow Short Scale, participants had to evaluate the amount each item related to them on a 7-point scale, with 1 meaning *"not at all"* to 7 meaning *"very much"*. The total result was formed as a sum of all items. A higher final result indicated higher achieved flow state. The flow items formed 2 factors of flow experience – *fluency of performance* and *absorption by activity*. This scale was also translated into Croatian, and psychometric characteristics of the scale were examined. The original factor structure was confirmed with Cronbach alpha coefficient of 0.78.

Procedure

Research was conducted via Google Forms online questionnaire during December 2018. Alongside measuring instruments, the questionnaire involved informed approval where we described the purpose and goal of our research and

insured the anonymity of one's data. Up to 15 minutes were necessary to complete the questionnaire. Participants were collected via the snowball method.

Results

Firstly, when it comes to descriptive statistics of our sample, we can see from Table 1. that all our predictors are normally distributed. The average score our participants had on the Game Addiction Scale (M = 38.3; SD = 11.8) is rather low which should be taken into consideration regarding the following findings.

To see which variables are significantly intercorrelated, we calculated the Pearson correlation coefficients which can be seen in Table 2. There is a significant positive correlation between game addiction and all variables with the exception of narcissism. On the other hand, there is a significant negative correlation between game addiction and self-esteem, meaning that those of lower self-esteem show a higher score on the Game Addiction scale. Those partici-

Table 1. *Descriptive statistics (N = 426)*

	M	*SD*	Min	Max	IS	IK
Video game addiction	38.31	11.78	19	76	0.43	-0.24
Sex			1	2		
Machiavellianism	28.46	5.87	9	45	-1.64	-0.67
Narcissism	23.45	5.49	9	43	0.14	0.04
Psychopathy	19.16	5.86	9	42	0.75	0.62
Self-esteem	38.03	7.42	11	50	-0.71	0.23
Flow	41.10	9.21	10	62	-0.60	1.10

Note: IS – skewness index; IK – kurtosis index; Sex – 1 = female; 2 = male

Table 2. *Intercorrelation matrix*

	2	3	4	5	6	7
1. Video game addiction	0.23**	0.16**	0.06	**0.25****	-0.26**	**0.33****
2. Sex	–	0.08	-0.05	0.07	0.48	0.21**
3. Machiavellianism		–	0.23**	**0.53****	-0.12**	0.10*
4. Narcissism			–	**0.40****	0.29**	0.04
5. Psychopathy				–	-0.13**	0.06
6. Self-esteem					–	0.12**
7. Flow						–

*$p<.05$; **$p<.01$

Table 3. *Regression analysis*

Predictors	β	r	sr
Sex	**.17****	.23**	.16
Machiavellianism	-.02	.16**	-.02
Narcissism	.09	.06	.07
Psychopathy	**.15****	.25**	.12
Self-esteem	**-.31****	-.26**	-.28
Flow	**.32****	.33**	.31
	R^2=.27	F=25.23	p<.01

*Legend: β = regression coefficient value; r = Pearson correlation coefficient; sr = semi-parcial correlation; R^2 = total variance explained; *p<.05; **p<.01

pants who were more addicted to video gaming were usually men, scoring high on Machiavellianism and psychopathy and experiencing more flow during the game. It can be seen that dark triad traits are significantly positively intercorrelated.

Finally, in order to test the predictive value of our variables to game addiction on the sample of video gamers, we conducted a multiple regression analysis. All requirements necessary for conducting regression analysis, including multicollinearity, were successfully met. The results can be seen in Table 3. Using dark triad traits, self-esteem, flow, and sex, we explained 27% of the variance of video game addiction. The significant positive predictors of video game addiction were flow, sex, and psychopathy while self-esteem was shown to be a significant negative predictor.

Discussion

This research aimed to examine the possible predictive value of dark triad traits, self-esteem, flow, and sex towards video game addiction. The conducted analyses indicate that flow and psychopathy as a personality trait are positive predictors, while self-esteem is a negative predictor of video game addiction. In addition to these variables, sex was proven to be a positive predictor of video game addiction.

As hypothesized, psychopathy, as one of dark triad traits, was proven to be important in the explanation of video game addiction, in such a way that individuals with a more pronounced personality trait of psychopathy also achieved higher scores on the video game addiction measure. The aforementioned result is in line with previous research which supports a positive correlation between psychopathy and excitement seeking, impulsive, aggressive, and addictive be-

haviour (Kircaburun et al., 2018). Knowing that there is a close connection between psychopathy and aggression and keeping in mind that video game addiction is most commonly associated with impulsive and aggressive behaviour (Jonason et al., 2012), it is advised to include these constructs in future research topics of video game addictive behaviour to further specify possible relationship. This finding surely is of use for practitioners, as it allows assessment for early detection and prediction of possible video game related addiction tendencies.

Machiavellianism and narcissism, as two remaining dark triad traits, were not proven to be significant in the explanation of video game addiction. Our findings are in contrast with expectations and previous research suggesting a positive correlation between Machiavellianism and frequent online gaming (Kircaburun & Griffiths, 2018) as well as the research suggesting a positive correlation between narcissism and problematic online gaming (Kim, Namkoong, Ku & Kim, 2008; Kircaburun et al., 2018). The inconsistency of the findings can be explained by different constructs used across various studies – e.g., video game addiction versus problematic online gaming. Furthermore, the construct of video game addiction in our research does not specify a certain type of game that is played. Due to the inconsistency of the findings, it would certainly be of great importance to include the mentioned constructs in further research attempts in order to examine possible interrelationships between the two dark traits and video game addictive behaviour and problematic online gaming.

As previously expected, self-esteem proved to be a significant predictor of video game addiction, with current findings suggesting that self-esteem is negatively related to video game addiction. While consulted literature indicates inconsistent results regarding the topic of self-esteem and video game addictive behaviour, our research suggests unambiguous findings where individuals with lower self-esteem are more likely to score higher on the video game addiction measure. Studies with similar results, which point to a negative relationship between the two constructs (Colwell & Payne, 2000; Bilić & Ljubin Golub, 2011), explain these findings with the rationale that lower self-esteem is usually compensated by indulging in video gaming (Colewell, Grady & Rhaiti, 1995). This gives us valuable information for practitioners, where development of preventive programs and video game addiction therapies should focus on the importance of furthering positive self-esteem, especially for high-risk video game addiction groups, in order to promote less antisocial behaviour.

Finally, as expected, flow has proven to be a significant predictor in explaining the overall variance of video game addiction, where participants with more pronounced flow state also scored higher on the video game addiction measure. The results confirm previous findings of both Hull et al. (2013) regarding the

predictive value of flow towards video game addiction, and Wood et al. (2007) whose research suggests that gamers who were more involved in high frequency playing were also more likely to experience game-related problems such as addiction and similar psychological consequences. At the same time, results are both interesting and concerning mainly because flow is often considered a positive characteristic and is primarily defined within the framework of positive psychology (Rijavec, Miljković & Brdar, 2008). However, in this context flow becomes a negative aspect of a pleasurable activity. While flow is usually praised for enhancing one's performance, in the context of negative and even possibly harmful activities, where it could promote or stimulate any type of addiction, flow is to be reviewed with caution. Though a negative aspect of flow is existent, the same does not indicate that any activity or every person will develop addictive behaviour, but the state of flow might only increase the possibility for such behaviour. For this reason, we should not run from the flow state, but should strive to be aware of our actions and train consciousness. We would suggest future research focuses on examining the difference in flow state depending on multi- over single-player video games in the broader context of video game addiction. Closer examination of the same construct may allow a more detailed design of a wide range of prevention programs not only for video game addiction but also for addictive behaviour of all kinds.

Even though sex was shown as a positive predictor of video game addiction, it is important to note that the correlation between sex and video game addiction is significant but low. This could be explained by the number of female participants in our research which is almost three times greater than the number of male participants. Hence, the obtained significance can be explained by the sample size effect.

The main disadvantages of this research are disproportion of male and female participants and target age of the participants who were mostly young adults. While the sample size effect has already been acknowledged, the target age is surely one of the disadvantages that can be corrected in future research. Bearing in mind that this research was conducted on a sample of young adults, given results should not be generalized to a broader population. During adolescence, men are known to have lower self-esteem which is associated with addictive behaviour (Colwell, Grady, & Rhaiti, 1995), so there is a possibility of attaining different results regarding self-esteem and age. Furthermore, general disadvantages of online research apply, with self-selection of participants as the leading one.

It is important to emphasize that the Game Addiction Scale for Adolescents was hereby used for the first time as a measure of video game addiction on the Croatian sample, where the original factor structure of the scale was

not obtained, nor all the original items are contained. Therefore, we welcome additional research and possible revisions of this measure.

In addition to the aforementioned guidelines for future research, there are other important constructs (e.g., depression, self-control, over usage of online platforms) that are worth exploring within the topic of video gaming and could contribute to further explanation and better understanding of video game addiction. Finally, it would be useful to examine the relationship between different types of game consoles and video game addiction, which has not been covered within this research, but could have a positive impact in developing more accurate individual prevention programs.

Conclusion

The conducted research contributes to the understanding of video game-related-addictive-behaviour, especially in Croatia where research on this topic is lacking. Multiple regression analysis showed that self-esteem and psychopathy as a trait of the dark triad prove to be significant predictors of video game addiction. The remaining predictors, specifically the two dark personality traits – narcissism and Machiavellianism, did not show significance in the explanation of overall variance of video game addiction. Further examination of this topic is necessary, keeping in mind a great presence of not only video games, but other related media, in our everyday lives.

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Do Adults Play?

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Abstract

Aims: The goal of this study was to attain a deeper insight into the play behaviour of adults and its possible association with well-being. The specific aims were to: (1) determine the frequency of participation in different types of play, watching out especially for any gender differences; (2) explore general connections between play and well-being indicators; (3) analyse "playmate patterns" and identify any associations between playmate selection and indicators of well-being.

Method: Research was conducted online on 407 adult citizens of Croatia averaging 26.3 years in age, 67% of whom were male. We assessed: (a) general happiness; (b) sense of flourishing; (c) frequency of different play activities; and (d) patterns of usual playmates.

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Results: The results showed that over two-thirds of study participants engage in a certain play activity at least once per week. The most popular play activities were sports and play with pets, while the least popular were mind games. On average, participants engaged in seven different play activities, but on an irregular basis for most of them, as seldom as a few times per year. There were no differences between men and women in the frequency or diversity of play, but women played more creative games, while men played more card games, sports and chess. Higher "flourishing" scores correlated with higher frequency of playing party games, while higher general happiness was related to: (a) higher total frequency of play; and (b) playing more problem solving, creative, or sport games. Participants who typically played either with their romantic partner or with children showed higher ratings for both happiness and flourishing.

Conclusion: Most adults engage in play activities on a regular basis, at least weekly. Play in adulthood should be encouraged as it is related to well-being, especially if one plays with children or one's romantic partner.

Keywords: play, games, well-being, playmate, adults

Introduction

Traditionally, play is associated with children. Consequently, most research on play has been designed to study children's play in various contexts and its effects on child development. While isolated scholars throughout history have stressed the importance of play in adulthood (e.g., Plato, Sartre, Huizinga and Caillois), adult play behaviour was not systematically researched until the end of the 20th century. In their discussion on adult play, psychology and design, Van Leeuwen & Westwood (2008: 153) note that: "According to the PsychINFO database, in the last 10 years more than 3000 psychological research articles written in English focused on child play, yet only 40 addressed play in adulthood or the elderly and this was mainly in therapeutic contexts". Research on play in adulthood nowadays is mostly oriented towards the therapeutic value of play, humour and playfulness as personality traits, and the determinants and consequences of playing digital games. Consequently, Cohen (2006) argued that current psychological theory has yet to catch up with the increasing role of play in the life of adults in the 21st century.

Play in adulthood is often perceived as frivolous, trivial and inappropriate, as opposed to serious, important and useful activities such as work and home maintenance. However, play is one of the rare activities known to all humans, and integrated in all cultures (Henricks, 2015). Across various countries and cultures and throughout history, adults have found various ways to accommodate their need for play. For example, play activities get masked by different names such as *leisure*, *hobbies* and *sports*, while rituals and celebrations provide "official" excuses to play (Brown & Vaughan, 2009). Nevertheless, adults often repress their urge to play. Walsh (2019) found that a fear of wasting time

was preventing adults' play, while Deterling (2017) argued that the potential embarrassment of public exposure inhibits playfulness. Most people still play mainly in their free time. The most widely pursued leisure activities involve: (i) browsing media (TV/internet/newspapers); and (ii) passive and/or active engagement with sports (playing, watching, reading, discussing). Depending on the type of play and the context, play can be casual (e.g., playing pantomime with friends, playing "fetch" with a dog, playing solitaire to kill time) or serious (e.g., basketball game, chess tournament), similar to the distinction made between *serious and casual leisure* made by Stebbins (2007). Casual leisure provides immediate pleasure or gratification that is usually short-lived and requires little effort. On the other hand, serious leisure embraces the need to persist, develop and master an activity, the attainment of durable benefits, strong identification with the pursuit and development of a unique ethos around the activity (Stebbins, 2007).

In the last 20 years, the importance of play for adult well-being, productivity and health was recognized by practitioners. We are witnessing the "ludification of culture" (Deterding, 2015) and postmodern infantilization (Bernadini, 2014). Instead of the traditional separation of play from serious activities, it has become evident that play is and should be included in diverse aspects of human life. Many companies acknowledge the value of playful environments and incorporate play elements into their work settings, schools have developed curricula that include learning through play, and play activities have been introduced into various caregiving institutions such as hospitals and nursing homes. Furthermore, expansion of new technologies has popularized video and online games, making play even more accessible than ever before. Moreover, most computer applications have been developed in a user-friendly, playful manner, to make working with them (similar to) playful activity.

As play is defined as *voluntary and pleasurable activity done for its own sake*, it is reasonable to predict that play would lead to happiness and satisfaction. Moreover, it could be expected to have both immediate benefits (e.g., feeling joyful or relaxed) and also long-term positive effects (e.g., developing a sense of mastery or affiliation). Fredrickson (2004) in her Broaden-and-build theory of positive emotions argued that play builds enduring physical, intellectual and social resources which contribute to an individuals' future well-being. Subjective well-being, as defined by Diener, Lucas & Oishi (2018) refers to the extent to which a person believes or feels that his or her life is going well, including both affective evaluations and cognitive appraisals. Scholars usually distinguish between *hedonic* and *eudemonic* well-being. Hedonic well-being is derived from pleasure, and lowered by pain, and comprises physical pleasures, pleasures of the mind and emotions. Eudemonic well-being refers to desirable psychological characteristics such as meaning and purpose, positive social re-

lationships, mastery, autonomy and virtues. Various play activities could be related to both hedonic (enjoyment derived from play) and eudemonic (e.g., sense of mastery, social affiliation) well-being.

Empirical studies exploring associations between adult well-being and engagement in play activities are rare, and mainly oriented towards digital games and sports. Regarding digital games, research has shown that moderate playing of video games may promote well-being (e.g., Russoniello, O'Brien, & Parks., 2009; Allahverdipour, Bazargan, Farhadinasab & Moeini, 2010; Kutner & Olson, 2008; Przybylski, Weinstein, Murrayama, Lynch & Ryan, 2011), but excessive playing is associated with mental health problems and decreased well-being (e.g., Caplan, William & Yee, 2009; Lemmens, Valkenburg, & Peter., 2011).

Sports participation was found to have positive effects upon subjective well-being (e.g., Downward & Rasciute, 2011). Downward & Dawnson (2015) found that the total minutes of sport participation positively affect happiness. Herero & Extremera (2010) found that older adults who play both solitary games and board games with others reported higher subjective well-being compared to those who did not play. Brkljačić, Sučić & Brdovčak (2017) reported that playing bridge in senior citizens contributed to their well-being by empowering social affiliation, improving the sense of accomplishment, and helping stay intellectually fit, and Brkljačić, Lučić & Sučić (2017) found that adult bridge players believe that playing bridge significantly improved the quality of their lives. In the study conducted by Brkljačić, Sučić, Glavak Tkalić, Wertag & Lučić (2019), an open-ended question asked participants to list games they play. The results showed that card games, creative social games and strategic board games were played by most of the participants, followed by children's games, party games and sports. The authors did not assess the frequency of specific play, but only frequency of play in general. People who played more offline games reported lower levels of depression.

Since play is an enjoyable activity and its main purpose is to make us feel good, there is not much point in exploring immediate effects of play on well-being – if it weren't pleasurable, we wouldn't do it, or even more precisely unless it is pleasurable it isn't play. However, long-term effects are not that obvious, and it seems that many leading authorities just presume that play must be beneficial (no need for proof) or provide anecdotal rather than empirical evidence. For instance, Winnicott (1971) claimed that the creative and experimental character of play provides adults with self-therapeutic value and has a positive impact on health and well-being. Stuart Brown, founder of the National Institute for Play, in his bestseller Play – How it Shapes the Brain, Opens the Imagination and Invigorates the Soul (Brown & Vaughan, 2009) describes various cases and examples of how play augments well-being, but rarely quotes any empirical findings on adult humans.

Accordingly, the present study aims to explore further the relationship between well-being and various play activities adults engage in as part of their ordinary lives. The focus of the research was play habits among Croatian adults and their impact on well-being, specifically the analysis of:

1. the frequency of engagement in different types of play, with close attention to any gender differences
2. the association between frequency of play and well-being indicators
3. playmate patterns and possible differential associations between playmate-types and well-being indicators.

Method

Procedure

The research was conducted on-line, via a questionnaire in English which was accessible to all adults from almost any country, although this study covers only the data from Croatians. The questionnaire was distributed and promoted via social networks. At the beginning of the survey, participants were informed that their participation is voluntary, that they can quit at any point, and that the data would be used for scientific purposes only. A comprehensive battery of questions included measures of personality traits, play habits and well-being.

Instruments

For the purpose of this research, the following variables were assessed:

Well-being was measured using a single item to assess general happiness from a hedonic perspective, and a Flourishing scale from a eudemonic perspective. The single item for measuring happiness: "In general, how happy do you usually feel?" was adapted from Fordyce (1988). Participants rated their happiness using an 11-point scale, from 0 "not happy at all" to 10 "extremely happy". The mean value and standard deviation of this item were $M = 7.1$, $SD = 2.07$, which is in accordance with, though a bit higher than, previous findings in Croatia (e.g., Brkljačić, Sučić, Lučić, Glavak Tkalić, Kaliterna Lipovčan, 2020). Flourishing scale (Diener et al., 2010) comprises eight items assessing different aspects of well-being such as positive relationships with others, feelings of competence, thriving, self-acceptance and having meaning and purpose in life. Participants rated each item on a seven-point scale ranging from 1 "strongly disagree" to 7 "strongly agree", to indicate their agreement with each statement (e.g., "I lead a purposeful and meaningful life"). The average score for each participant ranged from 1 (strong disagreement with all items) to 7 (strong agreement with all items). The scale showed adequate reliabilities of Cronbach's α

= 0.896, while the mean and standard deviation (5.5 ± .98) were similar to previous research (e.g., Prizmić-Larsen, Kaliterna-Lipovčan, Larsen, Brkljačić & Brajša-Žganec, 2019). The correlation between Flourishing and happiness was 0.65 ($p < 0.001$).

Frequency of play was measured by another questionnaire, constructed for the purposes of this research. To develop the questionnaire of play activities we first identified two focus groups and performed 20 individual interviews asking adults to specify how they play. On the basis of those interviews and previous research (Brkljačić, Sučić, Glavak Tkalić, Wertag & Lučić 2019), we developed a list of 10 groups of play activities: Outdoor sports, Indoor sports, Party games, Creative games, Strategy board games, Puzzles, Problem-solving games, Card games, Children's games and Play with pets. As the main focus of the overall research was mind games and sports, within card games we differentiate Bridge and Poker, while within board games we differentiate Chess, Chinese Chess, Draughts and Go. Therefore, the list contained 16 play rubrics. For each play activity, participants answered using a five-point scale: 1- never or almost never; 2 - a few times per year; 3 - a few times per month; 4 - weekly; 5 - a few times per week or more. At the end of this play activity list, participants were asked if they ever engage in any play activity not listed above, and if so, they were asked to name the activity and estimate frequency of play. *Frequency* was defined as the total sum of frequencies of all play activities. *Diversity* was defined as the number of different play activities one participates in at least occassionally. We formed two cumulative measures of playing: frequency and diversity.

Playmates were assessed using a checklist with six categories: Friends, Romantic partner, Children, Adult family members, Specialized clubs, and Tournaments or similar competitions. For each category, participants indicated if it applied to them. Additionally, we assessed the age and sex of study participants.

Participants

For the purpose of this study, we analysed the results of 407 Croatian participants who chose to answer the questionnaire. In this convenient sample the age range was 19-77 (M = 26.3 ± 7.86) years, of which 273 (67%) were male.

Results

The first aim of this study was to explore the frequency of various play activities. Table 1 presents participants' answers across all examined categories, along with means and standard deviations for each activity.

Table 1. *Engagement in different sorts of play (N=407).*

	Never or almost never	A few times per year	A few times per month	Weekly	A few times per week	
	F (%)	F (%)	F (%)	F (%)	F (%)	M±sd
Card games	**201 (49.4)**	113 (27.8)	64 (15.7)	22 (5.4)	7 (1.7)	1.82±.997
Strategy board games	113 (27.8)	**210 (51.6)**	62 (15.2)	19 (4.7)	3 (0.7)	1.99±.827
Creative games	118 (29.0)	**199 (48.9)**	64 (15.7)	21 (5.2)	5 (1.2)	2.01±.875
Party games	125 (30.7)	**161 (39.6)**	83 (20.4)	31 (7.6)	7 (1.7)	2.10±.981
Problem solving	141 (34.6)	**170 (41.8)**	63 (15.5)	25 (6.1)	8 (2)	1.99±.962
Puzzles	127 (31.2)	**155 (38.1)**	81 (19.9)	27 (6.6)	17 (4.2)	2.14±1.065
Indoor sports	132 (32.4)	**162 (39.8)**	72 (17.7)	27 (6.6)	14 (3.4)	2.09±1.035
Outdoor sports	117 (28.7)	**131 (32.2)**	71 (17.4)	54 (13.3)	34 (8.4)	2.40±1.259
Children games	**237 (58.2)**	103 (25.3)	40 (9.8)	15 (3.7)	12 (2.9)	1.68±.996
Play with pets	**121 (29.7)**	90 (22.1)	65 (16)	47 (11.5)	84 (20.6)	2.71±1.508
Bridge	**352 (86.5)**	20 (4.9)	6 (1.5)	8 (2.0)	21 (5.2)	1.34±.997
Poker	**234 (57.5)**	147 (36.1)	17 (4.2)	7 (1.7)	2 (0.5)	1.52±.705
Chess	**215 (52.8)**	134 (32.9)	28 (6.9)	16 (3.9)	14 (3.4)	1.72±.995
Go	**383 (94.1)**	11 (2.7)	6 (1.5)	5 (1.2)	2 (0.5)	1.11±.513
Ch. Chess	**391 (96.1)**	8 (2.0)	2 (0.5)	4 (1.0)	2 (0.5)	1.08±.448
Draughts	**376 (92.4)**	23 (5.7)	4 (1.0)	2 (0.5)	2 (0.5)	1.11±.445

Dominant values are in bold.

The data in Table 1 indicate that all distributions were skewed, showing high positive asymmetry. In all types of play, most participants either never engaged, or engaged only a few times per year. The lowest number of participants (less than 15%) played Chinese Chess, Go, Draughts and Bridge. Additionally, over half of the participants never or almost never played Poker (57.5%) and Chess (52.8%). The highest number of participants (over 70%) at least occasionally played strategy board games (72.2%), creative games (71%), outdoor sports (71.3%) and with pets (70.3%). The most popular activities, which most participants enjoyed at least weekly, were play with pets (32.1%) and outdoor sports (21.7%).

The number of different play activities engaged in (Diversity) varied from zero to a maximum of 17, with dominant value 9 and median of 7. Distribution was slightly negatively skewed (-.216). Participants on average engaged in 7 different play activities ($M = 6.99 \pm 3.66$). The average total frequency of play (Frequency) varied from 1 (never or almost never engaged in any form of play) up to 5 (engaged in all listed play activities a few times per week). The distribution was positively skewed (1.262), with the central value equal to the median (1.76) and similar to the mean (1.84 ± 0.472). Indicators of diversity and frequency together show that participants engage in various play activities, but for most they participate rather infrequently. However, most of the participants engage in at least one activity on a regular basis. Indeed, across various play activities, 280 (68%) participants engaged in a specific type of play at least once per week, while 170 (42%) of them engaged in a specific type of play a few times per week.

We detected some gender differences in frequency of play activities. T-test for independent samples was conducted to test the differences between genders, and because of multiple comparisons we decreased the acceptable risk to $p=0.001$. Although men and women did not differ regarding either total frequency of play ($Mmen=29.21$, $SDmen=7.989$; $Mwomen=27.89$, $SDwomen=6.171$; $t(df)=1.47(400)$; $p>0.001$), or play diversity ($Mmen=7.15$, $SDmen=3.409$; $Mwomen=6.62$, $SDwomen=3.123$; $t(df)=1.66(400)$; $p>0.001$), male participants were more engaged in both indoor ($Mmen=2.22$, $SDmen=1.075$; $Mwomen=1.83$, $SDwomen=0.894$; $t(df)=3.55(400)$; $p<0.001$) and outdoor sports ($Mmen=2.56$, $SDmen=1.288$; $Mwomen=2.09$, $SDwomen=1.146$; $t(df)=3.6(400)$; $p<0.001$), chess ($Mmen=1.85$, $SDmen=1.060$; $Mwomen=1.46$, $SDwomen=0.771$; $t(df)=8.37(400)$; $p<0.001$) and card games ($Mmen=1.95$, $SDmen=1.071$; $Mwomen=1.55$, $SDwomen=0.739$; $t(df)=11.13(400)$; $p<0.001$), while female participants engaged in creative games more often ($Mmen=1.90$, $SDmen=0.869$; $Mwomen=2.22$, $SDwomen=0.841$; $t(df)=3.48(400)$; $p<0.001$).

Table 2. *Spearman correlations between frequency of play and well-being indicators (N = 407)*

	Flourishing	Happiness
	r (p)	r (p)
Card games	-.007 (NS)	.001(NS)
Strategy board games	.068 (NS)	.091 (NS)
Creative games	.090 (NS)	.152 (.002)
Party games	.184 (.000)	.126 (NS)
Problem solving	.069 (NS)	.176 (.000)
Solo Puzzles	.050 (NS)	.082 (NS)
Indoor sports	.104 (NS)	.109 (NS)
Outdoor sports	.109 (NS)	.149 (.003)
Children games	.131 (NS)	.124 (NS)
Play with pets	.043 (NS)	-.041 (NS)
Poker	-.052 (NS)	.007 (NS)
Chess	-.057 (NS)	.018 (NS)
Total frequency of play	.101 (NS)	.151 (.002)
Diversity of play	.090 (NS)	.137 (NS)

NS=not significant

The second goal of this study was to test the association between engagement in play activities and well-being indicators. On the basis of both quantitative and qualitative findings of previous studies, we hypothesized that those who played more would display higher ratings of well-being. In this analysis we did not include Chinese Chess, Go, Draughts and Bridge because of extremely asymmetrical distributions. Furthermore, because of asymmetrical distributions of frequencies of play we conducted non-parametric Spearman correlations, and because of multiple comparisons we set the p value at 0.003.

The results in Table 2 show that engagement in most types of play showed a trend of positive association with well-being indicators. This trend reached a level of significance ($p \leq 0.003$) for: (1) association between flourishing and playing party games; and (2) association between general happiness and playing creative games, problem-solving games and outdoor sports. We also found a positive association between total frequency of play and general happiness. However, all correlations were rather low (<0.2).

The third aim of the study was to identify playmate patterns and test the association between types of playmate and well-being. These results are displayed in Table 3.

Table 3. *Usual playmates and Spearman correlations with well-being indicators (N=407)*

		Flourishing	Happiness
	Yes (%)	r (p)	r (p)
Friends	394 (85.7)	.107 (NS)	.028 (NS)
Romantic Partner	144 (35.4)	.149 (.003)	.196 (.000)
Adult Family Member	124 (32.9)	.010 (NS)	.029 (NS)
Children	95 (23.3)	.163 (.000)	.179 (.000)
Specialized clubs	55 (13.5)	-.044 (NS)	.057 (NS)
At Tournaments	60 (14.7)	-.007 (NS)	.054 (NS)

NS=not significant

To identify playmates, participants were asked to indicate with whom they usually played, and they could check as many options as they wanted. Most participants played with friends (85.7%), about one third played with their romantic partner (35.4%) and adult family members (32.9%), and about one quarter with children (23.3%), while the smallest number of participants (less than 15%) played at specialized clubs or at tournaments or similar official competitions. Playing with a romantic partner and playing with children was significantly associated with both well-being indicators.

Discussion

In this study we analyse in which play activities adults engage, how often and with whom. Our participants, on average, engaged in seven different play activities. Yet, most of those activities they practiced only a few times per year. For all categories except play with pets, over 70% of participants reported either never playing or playing just a few times per year. However, almost 70% of participants do engage in at least one play activity weekly. Therefore, it appears that participants have a small number (usually one or two) of preferred play activities in which they engage regularly. These preferred activities vary from one participant to another, but the most popular were playing with pets and outdoor sports, in which 32.1% and 21.7% (respectively) engaged on an at least a weekly basis. Both of these activities are broadly acknowledged and approved socially, and according to King (1990) may be classified as "valuable" pastimes and "appropriate" activities that do not break social norms (as opposed to gambling, for instance).

Gender differences were not found in the total amount of play, but men were more engaged in sports, card games and chess, while women played more creative games. Regarding the total amount of play, our results differed from those obtained by Brkljačić, Sučić, Glavak Tkalić, Wertag & Lučić (2019) who found that male participants more frequently engaged in both live and digital games. However, Brkljačić et al (2019) assessed frequency of play using an overall question where participants estimated how often they played in general, while in this study we applied a composite measure where frequency of play was defined as a sum of frequencies of separate playing activities. These various approaches to assessing the frequency of play activities could affect the results. Using the composite measure in this study provided us with a valuable insight into the frequency of different play activities. However, it is questionable how well this composite measure indicated the total amount of play since the simple sum of all activities favoured variety of play over the total amount. To deal with this issue we created another variable where frequency was recoded to capture an approximate number of playing occasions per year (e.g., once per week was recoded to 52). Still the results were similar as with the initial composite measure, and gender differences were not detected. Therefore, we suggest that future research should employ both measures (total amount of play and frequency of specific play activities). Regarding types of play preferred by males and females, our findings support the idea of men's prominent orientation towards competence, competition and challenge (e.g., Gill, Williams, Dowd, Beaudoin & Martin, 1996), which are much more strongly featured in sports and competitive games than in creative games.

Our hypothesis that playing is associated with well-being was partially confirmed. We found a significant positive correlation between flourishing and playing party games, and also between general happiness and playing problem-solving games, outdoor sports and creative games. Moreover, we found a positive association between total frequency of play and general happiness. Party games (e.g., drinking games, kissing games) are usually more fun and less competitive than strategy board games or problem-solving games. While these games may be challenging, the challenge is usually not intellectual. Party games have a strong social element, and this could be the reason why playing these games is associated with flourishing, if it helps in building social resources that could help maintain well-being in the future, as suggested by the broaden-and-build theory (Fredrickson, 2004). Party games are often embarrassing; sometimes childish and unlike most other listed types of games, it is difficult to provide an outside excuse, rather than having fun. On the other hand, the direction of causality could be the reverse: people with developed social skills and larger social networks may attend more parties and consequently play more party games.

People who play more problem-solving games, creative games and outdoor sports rated their happiness level higher. These are three rather different groups of games regarding content (intellectual, artistic and physical) and level of competitiveness (sports and problem-solving games typically competitive, versus the usually non-competitive creative games). Problem solving games (such as escape rooms, Dungeons and Dragons, quizzes) and outdoor sports (e.g., football) may enhance happiness by improving social contact and producing a sense of mastery, while creative games (such as art-related play) may contribute to well-being via development of imagination and affiliation. Still, it is rather unusual that associations were found for happiness, but not for flourishing, and this finding should be re-examined in future research.

Regarding playmates, most of our participants usually played with friends. This is in accordance with our expectations, especially because most of the participants were emerging adults and probably did not have their own families and children yet. Probably for the same reason, less than one quarter of participants played with children. Those who played with children had higher levels of flourishing and happiness. However, play was also found to be part of grown-ups' activities within families, since about one third played with adult family members. About one third of participants usually played with a romantic partner, suggesting that play is an important activity in intimate relations. Moreover, playing with a romantic partner, like playing with children, was significantly associated with one's well-being. It seems that play is associated with well-being when it is performed within the circle of one's closest contacts (romantic partner and children). We can speculate that this form of play is rather relaxed, less competitive and contributes to bonding with important others.

The main advantage of this study is in its novelty. Although many scholars claim that play is related to well-being, very little actual research has so far examined this hypothesis. To the best of our knowledge this is the first research to explore the relationship between engagement in various specific live games and subjective well-being. Similarly, we did not find any previous research focusing on types of usual playmates.

This study has some limitations that need to be mentioned. Most are consequences of the primary focus of the larger project, which was to explore characteristics of mind-game players in various countries. Because of this, the questionnaire was in English and was mainly promoted on the social-network walls of players of mind games, who are more likely to be connected to other players. Therefore, the sample was biased towards younger, more educated and more playful participants. Furthermore, frequencies of play were asymmetrical which prevented us from conducting parametric statistics. In this study, we limited our analysis to live-play. We are aware that many adults, especially

younger ones, play digital games as well, and often more than live games, but this type of play lay outside the focus of this study. Though we put much effort into generating our list of typical play activities, there is room for further improvement. We tried to cover the most important play areas, but also to keep it relatively short since we examined many other variables as well which are not presented in the current study.

Conclusion

To answer the main question of the study: Yes, adults play. Almost 70% engage in a certain play activity at least once per week. The most popular play activities were sports and play with pets, while the least popular were mind games. On average participants engaged in seven different play activities, but primarily only on a very irregular basis, a few times per year. There were no differences between men and women in frequency or diversity of play, but women played more creative games, while men played more card games, sports and chess. Certain play activities were related to a higher index of well-being. Those who played more party games had higher flourishing scores, while those who played more problem-solving, creative or sport games were happier. Participants who typically played either with a romantic partner or with children showed higher ratings for both happiness and flourishing.

Play in adulthood should be encouraged, since it is related to well-being indicators. Further research to examine the association between play and well-being in more detail is needed, since generalisation of the findings of this research was limited by a biased sample and correlation design which prevented us from drawing causal conclusions.

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What contributes to students' academic flourishing during studying at university

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Abstract

Background and Aims: Flourishing (combining both hedonic and eudaimonic well-being) is seen by many as being congruent with the purposes of higher education both at societal and individual levels. However, research in higher education predominantly focuses on academic performance and graduation rates, neglecting students' well-being during studying. In order to fill this gap in the literature, the aims of the study was to assess levels of academic flourishing in students according to their year of study, and the extent to which their personality, academic flow experiences and teachers behaviour are related to their academic flourishing.

Method: 126 psychology students (first to fifth year of study) from the Croatian Catholic University participated in the study. The following measures were applied: Academic Flourishing Scale, Proactive Personality Scale,

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Learning Climate Questionnaire assessing autonomy support from teachers and Study-related Flow Inventory assessing academic flow.

Results: There is no evidence that studying itself helps students in their academic psychological flourishing, but studying with experiencing academic flow and autonomy support from teachers were independently associated with higher academic flourishing, even after controlling for proactive personality.

Conclusion: Special attention should be devoted to increase students' autonomy and create conditions for flow experiences to occur in the academic domain. Results also suggest that proactive personality was related to flourishing, but mainly because proactive students benefit more from teachers' autonomy support.

Keywords: academic flow, academic flourishing, proactive personality, teacher's autonomy support

Introduction

The purpose of higher education is to prepare students for a successful and meaningful professional and personal life (Rombs, 2015). However, research in higher education predominantly focused on the factors determining academic development such as performance and graduation rates of college students. The issue of academic education on mental health of undergraduate students has become a concern of the research interest only in the last decades, but the prevalent focus of these studies was on psychological problems, study induced stress and burnout (e.g., Pedrelli, Nyer, Yeung, Zulauf & Wilens, 2015; Salmela-Aro & Read, 2017). Recently, a new line of research interest has moved away from investigating both academic achievement and mental health problems of students to students' wellbeing. A key concept emerging from this latest wave of research on wellbeing is flourishing, the concept combining both hedonic and eudemonic well-being (Keyes, 2002; 2007; Diener et al., 2010). Hedonic well-being includes a high degree of satisfaction with one's life, experiencing a high level of positive emotions, and low level of negative emotions, while eudaimonic well-being is characterized by meaning and self-realization (Ryan & Deci, 2001).

Earlier studies found that flourishing in college students is associated with various positive academic outcomes, such as higher grades, higher self-control and lower procrastination (Howell, 2009). As inquiry into the flourishing construct has progressed, the need for domain-specific flourishing has become a subject of research, such as flourishing at work (Frederickson, 2003; Losada & Heaphy, 2004) and marriage (Gottman, 1994). Since the academic domain is the most important life domain of college students, students flourishing in this domain (i.e., academic psychological flourishing) seems to be of crucial value (Rijavec & Ljubin Golub, 2018). In the field of higher education, the topic of flourishing has been rarely researched (Bean, 2005). However, there are only a

few studies of flourishing at university (Gokcen, Hefferon, & Attree, 2012; Ouweneel, Le Blanc, & Schaufeli, 2011). In order to fill this gap in the literature, the aim of the study was to assess the contribution of individual factors such as students' proactive personality as well as academic domain specific factors such as teachers' autonomy support and experiencing flow in academic activities, as factors determining variance of academic flourishing.

Proactive personality has been defined as a stable dispositional tendency of individuals who control situational forces and actively incite change in their environments (Bateman & Crant, 1993). Proactive personality leads to proactive behaviour (Seibert, Kraimer, & Crant, 2001; Bolino, Valcea, & Harvey, 2010) which is defined in the organizational context as the extent to which individuals engage in self-starting, future-oriented behaviour to change their individual work situations, their individual work roles, or themselves' (Griffin, Neal & Parker, 2007, p. 322). Proactive personality was theorized and empirically found to be related to numerous positive outcomes. In the organizational context, having a proactive personality was associated with high-quality relationships with their supervisors which, in turn, was associated with greater job satisfaction (Li, Liang, & Crant, 2010). It is also related to long-term career success (Seibert, Crant, & Kraimer, 1999). Proactive personality is also related to better mental health, and the relationship was mediated by job crafting (Zhang, Lu, & Li, 2018). Field investigation showed that proactive personality significantly influenced the success of college graduates' job search (Brown, Cober, Kane, Levy, & Shalhoop, 2006). In the academic context, students with proactive personality tend to be motivated to work hard (Fuller & Marler, 2009) and tend to develop ties to their field of study during their education before their future careers (Hunter, Laursen, & Seymour, 2007), which are behaviours that lead to study success. They are prone to view challenges as learning opportunities (Elliot & Harackiewicz, 1996). Thus, students' proactive personality predicted their academic self-efficacy in education (Lin, Lu, Chen, & Chen, 2014) and was also found to be positively related to STEM major commitment and to the active planning coping strategy and negatively related to behavioural disengagement (Major, Holland, & Oborn, 2012). However, the studies relating proactive personality to students' wellbeing are lacking, and there is no study relating students' proactive personality to flourishing.

Besides the individual differences expressed in terms of proactive personality, factors related to academic context may also be relevant for experiencing academic flourishing. In line with the self-determination theory (SDT, Deci and Ryan 1985; 2002), teacher autonomy support was found to be an important factor for students' well-being and also for better adjustment among college students (e.g., Levesque, Zuehlke, Stanek, & Ryan, 2004; Neufeld & Malin, 2020; Deci, Nezlek & Sheinman, 1981). Teacher autonomy support is a behaviour in

which teachers encourage appropriate independence in students and encourage them to make decisions and actively solve problems. Autonomy is one of three innate humane needs, and supporting this need is therefore associated with wellbeing across cultures (e.g., Levesque et al., 2004). However, the role of teacher autonomy support in academic flourishing has not yet been investigated.

On the other hand, according to flow theory (Csikszentmihalyi, 1990, 1997), flow is another important factor for well-being. Flow is a state of enjoyment in an activity, effortless but deep attention and absorption in the activity, loss of self, and the feeling of being in control of one's actions (Csikszentmihalyi, 1990, 1997). Flow, and especially flow experienced in learning, i.e., academic flow, was found to be an important factor not only for students' better achievement (e.g., Engeser et al., 2005; Ljubin-Golub, Rijavec & Olčar, 2016), but also for students well-being (Asakawa, 2010; Rijavec, Ljubin-Golub, & Olčar, 2016; Rijavec, Ljubin Golub, Jurčec & Olčar, 2017; Rijavec & Ljubin-Golub, 2019). However, there is no published study investigating academic flow and academic flourishing.

Research on academic psychological flourishing in respect of years of study is nonexistent. Ryff (1995) found no age differences in general flourishing in a sample of young people. However, there is a possibility that various experiences (such as experiencing flow, meaningful activities, and fulfilling one's potentials) could help students academically flourish as they progress during their studies.

We contribute to the literature on academic flourishing by utilizing the personality framework and SDT (Deci and Ryan 1985; 2002), and flow theory framework (Csikszentmihalyi, 1990, 1997). Therefore, the objectives of the study were to assess levels of academic flourishing in students according to their year of study, and to examine the role of proactive personality, teachers' autonomy support and academic flow in academic flourishing. The following hypotheses was put forward and tested:

Hypothesis 1: Levels of academic psychological flourishing will increase with increasing years of studies.

Hypothesis 2: Proactive personality, teachers' autonomy support and academic flow will be positive predictors of students' academic flourishing.

Method

Participants and Procedure

Participants were 126 psychology students from the Croatian Catholic University (88.8% female) of whom 42 were at second year of study, 26 at third year of study, 33 at fourth year of study and 25 at fifth year of study. The age

ranged from 19 to 30 years with an overall mean of 21.48 years (SD = 1.64). Participants completed a self-report questionnaire battery that included the Academic Flourishing Scale (AFS), the Proactive Personality Scale (PPS), The Learning Climate Questionnaire (LCQ), and The Study-related Flow Inventory (WOLF-S). *Paper* and pencil administration of questionnaires was used. The students were recruited from psychology courses and received no course credit for their participation in the study.

Measures

Academic Flourishing Scale (AFS)

Academic flourishing was assessed with the six-item scale (Rijavec & Ljubin Golub, 2018). Responses are rated on a 7-point scale ranging from 1 (*absolutely untrue*) to 7 (*absolutely true*). A sample item is "Studying helps me fulfil my potential." Higher scores indicate higher academic flourishing. Cronbach alpha in this study was .91.

Proactive Personality Scale (PPS)

Proactive personality was assessed by PPS, a 10-item brief form (Seibert et al., 1999) of Bateman and Crant's (1993) original scale. All items are rated on a 5-point Likert-type scale (1 = *strongly agree* to 5 = *strongly disagree*). An item example is "I excel at identifying opportunities" and "If I see something I don't like, I fix it". Higher scores indicate a higher level of proactivity as a personality trait. The scale was used in a Croatian sample of employed individuals and demonstrated good psychometric characteristics (Vid, 2018). In this study, Cronbach alpha was .87.

The Learning Climate Questionnaire (LCQ)

The LCQ (Williams & Deci, 1996) is a 15-item instrument rated on a 7-point Likert scale (1= *strongly disagree* to 7= *strongly agree*). It was developed to assess student perceptions of the degree to which their teachers are autonomy supportive rather than controlling. The LCQ has been shown to be a reliable and valid instrument with a single underlying factor (Williams & Deci, 1996; 1998; Black & Deci, 2000; Sviben, 2006). In this study we used a Croatian version of the 15-item LCQ (Sviben, 2006) assessing the general learning climate, i.e., general learning climate formed by the behaviour of all teachers, and not one specific teacher. The sample item is "My teachers at university encourage me to ask questions". Higher scores indicate greater perceived autonomy support. In this study, Cronbach alpha was .91.

The Study-related Flow Inventory (WOLF-S)

WOLF-S (Bakker, Ljubin Golub and Rijavec, 2017) is a 13-item instrument developed to assess academic flow with flow experience referring to the preced-

ing two weeks. It consists of 3 subscales assessing components of academic flow: absorption (4 items, an item example "When I am studying, I think about nothing else"), enjoyment (4 items, an item example "My study gives me a good feeling"), and intrinsic motivation (5 items, example of an item "I would still study even if I did not have to"). Each item is rated on a 7-point scale (1 = *never* to 7 = *always*). An overall score on the WOLF-S was computed as the mean of all 13 items. Higher scores indicate a higher level of study-related flow. The WOLF-S demonstrated adequate internal consistency and reliability. The value of Cronbach alpha was .93.

Results

Descriptive statistics

Table 1 presents descriptive statistics and the correlations among the variables. For all the variables, the values of skewness were between -0.14 and 0.22 and those of kurtosis between -0.29 and -.0.49, which is considered acceptable to prove a normal univariate distribution (Tabachnick & Fidell, 2007).

Generally, the mean scores of academic flourishing, proactive personality and teachers' autonomy support were above average, while mean score of academic flow was somewhat below average. At zero-order level, academic flourishing was weakly positively correlated with proactive personality, and moderately positively correlated with teachers' autonomy support, and academic flow.

Table 1. *Means, standard deviations and correlations of study variables*

	1.	2.	3.	4.	5.	6.
1. Academic flourishing	–	.28**	.51**	.63**	-.10	.10
2. Proactive personality		–	.19*	.38**	.02	.10
3. Teacher autonomy support			–	.19*	-.07	-.02
4. Academic flow				–	.10	.32**
5. Age					–	-.03
6. GPA						–
Min-max	2.44-7.00	1.90-7.00	1.47-6.67	1.31-6.38	19-30	2.95-5.00
M	5.49	5.16	4.85	3.71	21.48	4.12
SD	0.97	0.78	0.97	1.06	1.63	0.47

Note. GPA (grade point average) can range from 1 to 5; $^{*}p < .01$, $^{**}p < .01$

In order to assess differences in students' academic flourishing according to the year of study, one-way analysis of variance was performed. Two students did not report this information, so the total number of students was 124. The analysis of variance revealed no statistically significant differences in academic flourishing between students of different years of study ($F(3,121) = 0.28$, $p = .84$).

Predictive value of proactive personality, teachers' autonomy support and academic flow

In order to assess the contribution of predictive variables for academic flourishing, a hierarchical linear regression analysis was performed with proactive personality, teachers' autonomy support and academic flow as predictor variables.

Prior to conducting a hierarchical multiple regression, the relevant assumptions of this statistical analysis were tested. An examination of correlations (see Table 1) revealed that no independent variables were highly correlated, and the collinearity statistics were all within accepted limits (VIF > 10, tolerance < 0.2), so the assumption of multicollinearity was deemed to have been met (Coakes, 2005; Hair et al., 1998).

A four-step hierarchical multiple regression was conducted with academic flourishing as the dependent variable (Table 2). Age, gender and GPA were entered at step one as controlled variables. Proactive personality was entered at step two, teachers' autonomy support at step three and academic flow at step four.

The hierarchical multiple regression revealed that age, gender and GPA variables entered at step one accounted for 2.1% of the variation in academic flourishing but did not contribute significantly to the regression model, $F(3,120) = 0.86$, $p > .05$). Introducing the proactive personality variable explained an additional 7.6% of variation in academic flourishing and this change in R^2 was significant, $F(1,119) = 10.00$, $p < .001$. Adding teachers autonomy support to the regression model explained an additional 21.2% of the variation in academic flourishing and this change in R^2 was significant, $F(1,118) = 36.13$, $p < .001$. Finally, the addition of academic flow to the regression model explained an additional 26.6% of the variation in academic flourishing and this change in R^2 square was also significant, $F(1,117) = 73.18$, $p < .001$. However, with the addition of academic flourishing to the model, the proactive personality variable was no longer significant. Thus, when all predictor variables were included in step four of the regression model, the most important predictor of academic flourishing was academic flow which uniquely explained 26.6% of the variation in academic flourishing, followed by teachers' autonomy support which

Table 2. *Predictors of students' academic flourishing*

Predictors	β	t	R^2	ΔR^2
1st step			.021	.021
Age	-.101	-1.119		
Gender	.018	.203		
GPA	.101	1.116		
2nd step			.097	.076**
Age	-.109	-1.254		
Gender	.054	.617		
GPA	.078	.884		
Proactive personality	.279	3.163**		
3rd step			.309	.212***
Age	-.075	-.975		
Gender	.062	.798		
GPA	.096	1.246		
Proactive personality	.190	2.407*		
Teachers autonomy support	.470	6.011***		
4th step			.574	.266***
Age	-.139	-2.274*		
Gender	.031	.505		
GPA	-.082	-1.271		
Proactive personality	-.007	-.109		
Teachers autonomy support	.387	6.203***		
Academic flow	.597	8.547***		

Note. N =124; *$p < .05$, **$p < .01$, ***$p < .001$

explained 21.2%. All together the independent variables accounted for 57.4% of the variance in academic flourishing.

Discussion

Since flourishing is rarely studied in the context of higher education, the aim of the study was to assess levels of academic flourishing in students according to their year of study, as well as the extent to which their proactive personality, teachers' behaviour and experiencing academic flow, contribute to their academic flourishing. First, it should be noted that students show above average level of academic flourishing, but to a moderate extent. However, this level does not change according to their year of study, suggesting the possibility that experience of studying does not help them to flourish academically. Although it may be theorized that students at higher years of studying are more deeply involved in their major and had successfully completed the beginning years of

studying, and thus had more opportunities for self-actualisation and success, i.e. may flourish at higher levels than students at the beginning of their university studies, it seems that this is not true. One of the possible reasons is that studying for the university degree can generate a considerable amount of stress in students or even burnout (Dyrbye et al., 2010; Frajerman, Morvan, Krebs, Gorwood, & Chaumette, 2019; Hernesniemi, Räty, Kasanen, Cheng, Hong & Kuittinen, 2017; Lin & Huang, 2014; Rosales & Rosales, 2014). Some of them who began their studies with enthusiasm, subsequently came to express a sense of disappointment, lack of energy, feeling of emptiness or failure, low self-esteem, lack of concentration, and desire to leave their studies (Caballero-Domínguez, Gutiérrez & Palacio Sañudo, 2015), all of which can prevent them from academic flourishing.

Although we expected all predictor variables (proactive personality, teachers' autonomy support and academic flow) to positively predict academic flourishing, in the final step of hierarchical regression analysis academic flow was the most significant predictor, followed by teachers' autonomy support. This is in line with previous research that indicates a positive relationship between flow in academic activities and psychological well-being, which is a component of flourishing (Steel & Fullagar, 2009). According to Moneta (2004) the concept of flow integrates both hedonic and eudaimonic aspects of well-being, thus helping individuals to flourish. Flow is a highly enjoyable state that increases the immediate level of happiness or hedonic well-being. At the same time, in order to experience flow students must use their abilities to the highest extent thus making the flow mechanism that fosters their growth and helps them develop their potentials (eudaimonic well-being).

Teachers' autonomy support was also a significant predictor of academic flourishing. Several previous studies support the idea of the positive relationship between teacher's autonomy support and well-being of their students. In the study done by Chirkov and Ryan (2001) with American and Russian high school students it was found that teachers' autonomy support was related to overall psychological well-being measured as self-esteem, self-actualization and life satisfaction, concepts that are similar to flourishing. Previous studies showed that in order to experience flourishing, students' basic needs (including autonomy) have to be met and satisfied (Mesurado, Salanga, & Mateo, 2015). The need for autonomy may be very important for students because choosing a university education and future career is possibly one the first big personal life choices for them. Students taught by autonomy supportive teachers experience more creativity, self-worth and preference for optimal challenge (Deci, Nezlek & Sheinman, 1981) and greater well-being.

Practical implications

This study suggests that it is very important for students' academic flourishing that teachers should provide them with flow-inducing activities. These activities should include tasks that are challenging, have clear goals, require active involvement, deeper learning, and have utility value. In addition, teachers should provide students with clear and immediate feedback.

Also, universities should stress the importance of autonomy-supportive teachers and classrooms since such an environment fosters students' academic flourishing. This can be done in several ways such as providing students with choice whenever possible, helping student to understand the value of a particular task when they find it uninteresting, using informational and not controlling and judging language and explaining the requested behaviours (Reeve, Jang, Carrell, Jeon & Barch, 2004; Stefanou, Perencevich, DiCintio, & Turner, 2004; Stroet, Opdenakker & Minnaert, 2013). Further teacher training in this field is needed, especially since studies suggest that teachers are able to change their motivating style and include more autonomy support behaviours in order to encourage their students to be more engaged during instruction (Reeve et al., 2004).

In order to improve flourishing in higher years of study, students should be given opportunities to engage in activities related to their future job, since these activities can provide students with a sense of achievement, meaning and self-growth, the crucial components of flourishing. Also, faculties could benefit from surveys about the sources of students' stress at higher years of study.

Limitations and future directions

Several limitations of this study should be mentioned. First, since all data are cross-sectional any conclusions about causality cannot be drawn from the findings. Future longitudinal studies are needed to confirm the results of this study. Also, all data were collected with self-report questionnaires. Particularly for measuring flow, other measures such as the experience sampling method, the diary method (Csikszentmihalyi and Schneider 2000) or observer ratings could be used in future studies. Teachers' autonomy support was measured by students' perceptions which are often more accurate than teachers own judgment of their behaviour (Vallerand et al. 1997). However, teachers' own ratings of their autonomy support would be valuable in future research. The last limitation concerns the convenience of the sample used. The sample is not representative of the university student population which limits the generalizability of the study. Thus, further studies in other samples are needed. It may also be of interest for future research to include the assessment of proactive behaviour,

since a modest meta-analytic correlation was found between proactive personality and proactive behaviour (Fuller & Marler, 2009).

Despite the above limitations, this study provides a foundation for future research on the role of teachers' autonomy support, academic flow and academic flourishing in the university student population.

Conclusion

No significant differences in academic flourishing between students of different years of study were found, thus showing no evidence that studying itself helps students in their academic psychological flourishing. However, experiencing flow in academic activities and having autonomy supportive teachers may be beneficial for students' academic psychological flourishing. This suggests the importance of autonomy-supportive teachers at university as well as creating conditions that facilitate the flow experience in academic activities.

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Differences in self-assessments of teachers' competencies related to integrated education regarding years of work experience

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Abstract

The aim of the research is to investigate the existence of differences in assessments of teachers' own professional competencies related to integrated education regarding years of work experience. The purpose of the research is to gain insight into possible differences between groups regarding years of work experience, which can affect the quality of the educational process related to the integrated education of pupils with developmental difficulties.

In data processing, in addition to calculating descriptive data of the scales and frequencies per item, to determine the deviation between observed and expected frequencies, the $\chi 2$-test was used. The sample of participants in the study consisted of 202 teachers from eight primary schools in Istria County, divided into four groups according to years of work experience. The results suggest small differences in estimates of individual competencies between teachers with less and those with the more years of work experience.

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The results indicate the need for continuous assessment of teachers' responsibility to provide pupils with developmental difficulties with an education and enable advancement in accordance with their abilities, as well as the responsibility to discover alternative ways to meet their different needs. The conclusion is that there is a need for continuous professional training during work, but also for a better offer and availability of such training for teachers.

Keywords: pupils with developmental difficulties, competencies, teachers, self-assessment, lifelong education

Introduction

Regular education in recent years has faced new challenges considering the education of pupils with developmental difficulties. Meanwhile, there are numerous questions and dilemmas requiring the scientific and expert reflection of all participants of the educational process, but also of other entities that are directly or indirectly related to these challenges (Đuranović, Klasnić, & Lapat, 2013).

A competent person can be defined as a person who is qualified to perform a particular job. The definition of competencies includes motivation and action to achieve some degree of qualification. Competencies relate to the individual's ability to understand and perform certain tasks adequately and efficiently in accordance with the expectations we have of this person as a professional qualified for a specific area (Kaslow, 2004).

Leutar and Frantal (2006) have reached a conclusion in their study regarding the disapproving views of teachers on the integration of pupils with developmental difficulties into the regular school system. Teachers emphasize that they do not have sufficient professional assistance or sufficient material resources for effective work with those pupils. Similar conclusions came from Vršnik Perše (2007), who found that most teachers declared the problem of insufficient knowledge in the field of work with pupils with special needs and developmental difficulties in elementary school. She concluded that teachers and professional associates should be more involved, both in identifying problems and in systematic additional education and advanced training. She also indicated that teachers emphasize that they have notable difficulties in the innovative teaching of pupils with developmental difficulties and that they are being professionally overloaded by this kind of tasks on a long-term basis.

Igrić (2015) states that teachers initially experience uncertainty and resistance, especially those teachers who have not previously worked with pupils with difficulties. With time, teachers increase their self-confidence and professional competence because of their successful coping with new challenges and

experiences they have acquired with different children, and they adapt their work accordingly (Brady, Swank, Taylor, & Freiberg 1992).

Research shows (Gallagher & Malone, 2009, Milenović, 2009, Zrilić, 2013, Ivančić & Stančić 2013) that teachers often state they are not sufficiently prepared to support pupils with developmental difficulties in regular education. Teacher quandary in working with pupils with developmental difficulties is associated with insufficient professional competence, fear that they will not have adequate support from the expert team, absence of motivation, absence of support from parents of pupils without difficulties, connected to fear that their children will not receive sufficient stimulation, fear that pupils with difficulties will not be accepted, apprehension that pupils with developmental difficulties will require maximum attention in the overcrowded class etc. Of particular importance is the level of support to individualized teaching methods for pupils with difficulties which is closely related to the attitudes of teachers towards the inclusion of pupils with developmental difficulties in regular system of education (Avramidis & Norwich, 2002). In this context, we found the research of authors Rijevac, Miljević-Riđički and Vizek Vidović (2006) on the professional competencies of beginner teachers and students of the final years of teaching studies in Croatia to be valuable. The results showed that teachers and university students assess themselves sufficiently competent for planning, managing content and teaching, but not abundantly competent in collaborating with parents, and working with pupils with developmental difficulties and behavioural problems.

Teachers should be reflective practitioners who know how flexibility and certain methods of teaching or activity can inspire the creativity of their pupils, create a better contribution to personalized learning and acquisition of new skills (*The Strategy of Professional Training for Professional Development of Educational Workers, 2014-2020*). In fact, the research of educational practice (Havey, 2007) found that the quality of the educational process depends on the manifestation of professional competencies of teachers that contribute remarkably to the ways in which pupils behave, and which includes knowledge, skills and attitudes related to integrated education.

It can be deducted that education of pupils with developmental difficulties requires a change of the teachers' role in programming for pupils with developmental difficulties as well as the availability and cooperation with the educational rehabilitator (Igrić, 2015). Also, teachers should possess specific competencies (Vizek Vidović, 2009) that are particularly significant in the planning and implementation of individualized approaches in working with pupils with difficulties. In this context, competencies such as the ability for pupil and parent counselling, commitment to foster achievements and pupil progress,

the ability to create a stimulating climate for learning and the application of knowledge, the ability to assess learning outcomes and pupil achievements, collaborative problem-solving, responsiveness to different needs of learners, improvement of teaching and learning environments, and the ability to adapt curricula to a specific context of education are important.

Aim, Hypothesis and Purpose of Research

The aim of the research is to investigate the existence of differences in assessments of teachers' own professional competencies related to integrated education regarding years of work experience.

The purpose of the research is to gain insight into possible differences between groups regarding years of work experience, which can affect the quality of the educational process related to the integrated education of pupils with developmental difficulties.

The null hypothesis is set:

H_0: *It is assumed that teachers, regardless of years of work experience, equally evaluated their own competencies related to the integrated education of pupils with developmental difficulties.*

The hypothesis is based on the assumption, on the one hand, that teachers with less work experience will have better competencies, given that recent programs of teacher studies are substantially richer in this context and the new generations of teachers have been more exposed to the education of pupils with developmental difficulties due to a significant increase of integration (Peterson & Beloin, 1998; Avramidis, Bayliss, & Burden, 2000; McKinnon & Gordon, 1999; Paterson & Graham, 2000; Westwood & Graham, 2003), while, alternatively, older generations have more experience in direct work with those pupils.

Methods

Participants

The sample of participants in the study consisted of 202 primary school teachers from eight Primary schools in the Istrian County, 97.5% female and 2.5% male participants.

According to years of work experience, participants are divided into four groups, in a way that 29.2% of them have up to 10 years of experience, 32.2% have 11 to 20 years of experience, 27.7% have 21 to 30 years of experience and 10.9% have over 31 years of experience.

Instruments

An instrument was created for the purpose of this research. The instrument wass constructed to get insight into the professional competencies of teachers that can consequently affect the quality of the educational process related to the integrated education of pupils with developmental difficulties. A pilot study was previously conducted on 141 Primary school teachers employed in seven Primary schools in the Istrian County in Croatia (Goldin, 2017). Factor analysis was carried out to determine the factorial structure of the questionnaire. It was preceded by a review of suitability for factor analysis, where it was shown, according to the Kaiser-Meyer Olkin Test (KMO =. 85) and the Bartlett Sphericity Test ($\chi 2$) (190) = 3598.5, p <. 001, that the data was suitable for factor analysis.

The validation of the instrument was performed, and the results of the confirmatory factor analysis of the instrument (20 items) indicated a four-factor solution that explains 69.68% of the variance. The factors were: *skills, attitudes, readiness, and knowledge*. Covariances and correlations between variables proved to be consistent with the assumed factor structure (the covariance structure of the theoretically assumed model was different from the covariance matrix of the obtained data, *GFI* >. *80, NFI* > .81, *RMSR* < .09). Reliability of the skills scale (α =. 72), attitudes scale (α =. 86) and readiness scale (α =. 91) was satisfactory, while the knowledge scale had low reliability (α =. 23). Descriptive data indicated the relatively negative asymmetry of distribution of results on all factors, which may indicate a weak sensitivity of the instrument. Due to the low reliability, the knowledge scale' items are not considered for future research.

In the final version, the instrument consisted of 16 items (see Table 2) which were evaluated by a five-degree scale of the Likert type (1 = completely disagree, 2 = partially disagree, 3 = cannot decide, 4 = partially agree and 5 = fully agree).

Statistical analyses

In data processing, in addition to calculating descriptive data of the scales and frequencies per items in order to determine the deviation of observed frequencies from expected frequencies, the $\chi 2$-test is used, as an integral part of the IBM SPSS program 24.0 Standard Campus Edition (SPSS ID: 729357 20. 5.2016).

Procedure

The survey was conducted at the end of 2017 via an online questionnaire. Participants were acquainted with the purpose of the survey, they were guaranteed anonymity, and informed that the data will be used solely for scientific purposes. Answering was voluntarily and participants were able to withdraw from the survey at any time.

Results and discussion

Table 1 shows the descriptive results for the scales. Distribution of scales deviate from normal. The distributions are relatively negatively asymmetric, i.e., most of the participants' results are of relatively high value.

Specific differences between four groups are visible for three items (Table 2) i.e., for three items deviations of observed frequencies from theoretical or expected frequencies are significant as their $\chi 2$ test values are greater than the corresponding limit values at the appropriate level of freedom. Thus, teachers with less than 10 years of work experience, which represents the new generation of teachers, and those with 11 to 20 years of work experience are self-evaluating higher competencies than teachers with 21 and above years of work experience on item 9: *I consider that pupils with severe hearing impairment can be a part of regular class* and item 10: *I am ready to accept a pupil with severe hearing impairment in my class*. In addition, teachers with less than 10 years of work experience are self-evaluating higher readiness on item 20: *I am ready to accept a pupil with a behavioural disorder in my class,* but teachers who have 21 to 30 years of experience are more prepared for the above-mentioned than teachers who have 11 to 20 years of work experience. So, the hypothesis $H_{0,}$ which assumed that teachers equally assess their own competencies related to the integrated education of pupils with developmental difficulties, may be partially accepted. In fact, the differences between the observed four groups are statistically significant in only three items.

The responsibility of the teacher is to allow children with difficulties to develop learning and advancement according to their abilities, and it is there-

Table 1. *Descriptive data for scales*

	M	*SD*	Median	Mod
skills	3.87	1.49	3.79	4
attitudes	3.88	1.51	3.82	4
readiness	3.54	1.26	3.47	3.5

Table 2. *Relative frequencies and values of χ2- test*

		Completely disagree	Partially disagree	Cannot decide	Partially agree	Completely agree	χ^2	*p*
4. I am ready to accept one pupil with developmental difficulty in my class.	0-10	2	2	8	13	34	8.583	.738
	11-20	5	3	9	17	31		
	21-30	3	5	7	11	30		
	31 and above years	0	1	3	2	16		
5. I am ready to accept more than one pupil with developmental difficulty in my class.	0-10	8	13	13	11	14	10.426	.579
	11-20	15	10	14	16	10		
	21-30	13	7	12	16	8		
	31 and above years	4	2	5	9	2		
7. I consider that pupils with severe vision impairment can be a part of regular class.	0-10	3	2	8	15	31	7.992	.786
	11-20	4	3	14	17	27		
	21-30	6	4	11	12	23		
	31 and above years	0	2	6	5	9		
8. I am ready to accept a pupil with severe vision impairment in my class.	0-10	4	0	10	15	30	16.885	.154
	11-20	3	6	11	16	29		
	21-30	7	1	10	18	20		
	31 and above years	0	1	7	6	8		
9. I consider that pupils with severe hearing impairment can be a part of regular class.	0-10	2	0	5	20	32	31.974	.001*
	11-20	0	6	14	22	23		
	21-30	5	2	17	20	12		
	31 and above years	1	1	3	12	5		

10. I am ready to accept a pupil with severe hearing impairment in my class.	0-10	4	1	10	14	30	27.881	.006*
	11-20	2	7	12	20	24		
	21-30	5	0	18	20	13		
	31 and above years	1	1	3	12	5		
11. I consider that pupils with severe speech, language and voice disorders can be a part of regular class.	0-10	7	4	10	19	19	9.414	.667
	11-20	3	8	12	24	18		
	21-30	8	3	10	19	16		
	31 and above years	2	3	3	11	3		
12. I am ready to accept a pupil with severe speech, language, and voice disorder in my class.	0-10	7	4	10	16	22	10.037	.613
	11-20	4	9	13	16	23		
	21-30	6	4	8	20	18		
	31 and above years	2	2	3	11	4		
13. I consider that pupils with reduced intellectual abilities can be a part of regular class.	0-10	5	1	10	19	24	13.518	.333
	11-20	2	10	13	23	17		
	21-30	4	5	11	17	19		
	31 and above years	2	1	2	10	7		
14. I am ready to accept a pupil with reduced intellectual abilities in my class.	0-10	4	3	8	19	25	12.293	.422
	11-20	6	4	12	20	23		
	21-30	4	10	5	20	17		
	31 and above years	1	1	2	10	8		
15. I consider that pupils with autism can be a part of regular class.	0-10	11	7	13	19	9	9.690	.643
	11-20	12	10	18	17	8		
	21-30	9	12	17	8	10		
	31 and above years	4	3	6	8	1		

16. I am ready to accept a pupil with autism in my class.	0-10	9	10	13	15	12	13.108	.361
	11-20	12	12	16	12	13		
	21-30	5	17	17	11	6		
	31 and above years	3	3	8	7	1		
17. I consider that pupils with severe motor disorder can be a part of regular class.	0-10	3	5	11	17	23	8.159	.773
	11-20	3	7	10	23	22		
	21-30	6	8	9	11	22		
	31 and above years	1	3	2	9	7		
18. I am ready to accept a pupil with severe motor disorder in my class.	0-10	3	7	11	15	23	8.292	.762
	11-20	3	5	18	14	25		
	21-30	8	7	13	10	18		
	31 and above years	2	3	4	6	7		
19. I consider that pupils with behavioural disorder can be a part of regular class.	0-10	6	3	7	19	24	16.343	.176
	11-20	12	6	12	21	14		
	21-30	8	6	11	12	19		
	31 and above years	1	2	7	9	3		
20. I am ready to accept a pupil with behavioural disorder in my class.	0-10	5	3	6	21	24	21.062	.049*
	11-20	11	8	13	19	14		
	21-30	12	5	10	11	18		
	31 and above years	1	3	8	6	4		

df=12

fore very important to prepare the teacher for such work. Delivering a customized program with a favourable educational climate and communication in the classroom environment, and with good cooperation with family members of pupils with developmental difficulties, would enable educational performance (Rijevac et al., 2006). In this context, it is necessary to provide support programs for teachers, ranging from training to assistance in their daily work (Bouillet & Bijedić, 2007; Bouillet, 2010).

Finally, from all of the above it follows that the definition and articulation of the necessary competencies is important not only to perform professional activities of an occupation, but also for the opportunity to develop comprehensive educational programs for future teachers (Ricijaš, Huić, & Branica, 2006). In this context, Opara (2007) points out that education of teachers for inclusive teaching must help teachers to assimilate and apply information in terms of finding alternative routes to satisfy the diverse needs of pupils.

Conclusion

It can be concluded that teachers with less than 10 and those with 11 to 20 years of experience in this context evaluated their competencies highly, in particular readiness and attitudes when it comes to acceptance of children with significant difficulties related to hearing impairment. Teachers with work experience longer than 21 years are considered generally ready to accept a pupil with a behavioural disorder in their class. The hypothesis H_0 which assumed that teachers equally assess their own competencies related to the integrated education of pupils with developmental difficulties may be partially accepted. The obtained results indicate relatively small differences in self-assessment of competencies between teachers' groups.

Possible limitations of the interpretation of results are related to the occasional sample of participants, a relatively unevenly distributed sample with respect to the years of working experience of the participants, the relatively weaker sensitivity of the instrument, and the fact that a knowledge scale was not considered. The main limitation is that no parametric test was applied to give greater insight into the differences between the groups. This indicates the need for further research in a more detailed way regarding years of work experience of teachers, which should include knowledge as a scale that, to a larger degree, affects the quality of the educational process in general, and is not limited to integrated education.

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Beliefs about the high abilities of twice-exceptional students with dyslexia. Preliminary findings on the construction of multiple measures of beliefs about the high abilities of twice-exceptional children scales

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Abstract

Preservice teacher education significantly contributes to the formation of preservice teachers' beliefs about the characteristics of students with special educational needs, including twice-exceptional students with dyslexia. Specific beliefs that students with dyslexia can have high abilities in some cognitive domains and that they can also be gifted is an important predictor of future teachers' ability to recognise such students and to build on their strengths, rather than focus only on supporting them in domains that are challenging for them. The aim of this paper is to present findings from a pilot study

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designed to evaluate the measurement characteristics of the Beliefs about Twice-Exceptional Students with Dyslexia Scale and to determine whether different generations of preservice teachers differ in their beliefs about twice-exceptional students with dyslexia. A convenience sample consisted of 159 students (97.5% female, Age: M = 20.67; SD = 1.67) from Teacher Education Study Program in Croatia ranging from the 1st to the 5th year of study. The 15-item scale showed satisfactory psychometric characteristics. The exploratory component analysis provided evidence for a single construct measure that demonstrated high reliability with a tentative possibility for differentiation of set of items related to innovative, creative and artistic thinking from the set of items related with visual learning and processing abilities. Students from higher years of study had significantly higher scale scores when compared with students from the first two years. To conclude, the contribution of this research is in the scientific approach to the measurement of investigated construct and in illuminating future teachers' beliefs about the potential of twice-exceptional students. Further longitudinal research should investigate the possibility that positive beliefs about twice-exceptional students with dyslexia are more prominent as students advance through the study program and enrol in a course or research a topic about inclusive education.

Keywords: dyslexia, twice-exceptional students, high abilities, preservice teachers, teachers' beliefs

Introduction

Special educational needs are recognised through inclusive legislation in two domains: gifted students and students with disabilities, including students with dyslexia. Giftedness is a broad term with no universally accepted definition (Ronksley-Pavia, 2015). Among many theoretical conceptions of giftedness, Renzulli's Three-Ring Conception of Giftedness (Renzulli & Reis, 1997) and Gagné's Differentiated Model of Giftedness and Talent (Gagné, 1985) are two of the most used with the broadest implications in gifted education.

Since the 1980s, giftedness with coexisting disabilities is recognised in American educational settings (e.g. Berninger & Abbott, 2014), and exceptionalities are viewed on the ability continuum spectrum (Gilger & Hynd, 2008). Students with disabilities that are gifted are labelled under different terms: twice-exceptional (2e), gifted/talented with disabilities, able with disabilities and high able with disabilities. The most widely used term for that population is twice-exceptional, meaning that those students are both intellectually gifted (based on a standardized assessment), and diagnosed with diverse disabilities. In other words, a learner "is considered twice exceptional when he or she is identified as gifted/talented in one or more areas while also possessing a learning, emotional, physical, sensory, and/or developmental disability" (Yewchuk & Lupart, 1993, p. 14). "Developmental exceptionalities span the range of learn-

ing abilities and encompass children with both learning disorders and learning gifts" (Gilger & Hynd, 2008, p. 214). 2e students are an extremely small and heterogeneous population in regular educational settings with diverse individual profiles, abilities and special needs (Prior, 2013). Among twice-exceptionalities, dyslexia is one of the most common forms (The International Dyslexia Association, 2013). Those students manifest typical characteristics of dyslexia that are primarily related to problems in the acquisition of reading and writing skills and high abilities/specific talents in many areas of cognitive functioning.

A theoretical and empirical framework on twice-exceptional students with dyslexia is lacking (Gilger & Hynd, 2008). The co-occurrence of dyslexia and high abilities is still insufficiently researched, and the findings are often inconsistent. Although there is no unique description of 2e students with dyslexia, specific high abilities in two domains are usually mentioned: innovative, creative, artistic thinking and visual learning and processing (Gilger & Hynd, 2008; Mortimore, 2008). The prevalence of twice-exceptionalities among students with dyslexia is about 2% of the population of children with dyslexia (Montgomery, 2003). According to Toffalini, Pezzuti and Cornoldi (2017) the prevalence of giftedness (IQ above 130) in children with dyslexia depends on the type of intelligence test used. If the test does not include measures in which they show weaknesses (such as working memory or processing speed measures) the prevalence is higher (3.75% of the population of children with dyslexia). In addition to the insufficient theoretical and empirical framework on 2e students with dyslexia, there is also a lack of scientific papers that thoroughly support research in this area. While some studies confirm the existence of twice-exceptionalities in students with dyslexia in certain domains, others disagree with such assumptions. Studies examining overall creativity and original thinking (e.g., carrying out an unusual combination of ideas, problem-solving, capturing the essence of an idea, synthesizing dissimilar concepts, expressing humour) generally confirmed that students with dyslexia could achieve above-average results (e.g., Cancer, Manzoli, & Antonietti, 2016; LaFrance, 1997; Tafti, Hameedy, & Baghal, 2009). On the other hand, inconsistent results were mostly obtained on studies dealing with various aspects of visual-spatial functioning. For example, the results of the research conducted by Von Karolyi and Winner (2004) indicate better results of 2e students with dyslexia on the global (holistic) spatial test, Duranovic, Dedeic and Gavrić (2015) found better results on the analytical spatial test and Tafti et al. (2009) on the visual-spatial memory test. On the other hand, Winner et al. (2001) refute the spatial superiority of students with dyslexia. Their group of students with dyslexia did not outperform non-dyslexics in rotation tasks, perceptual organization, visual memory and visual test of the flexibility of closure.

The International Dyslexia Association (2013) provides different explanations about etiology of twice-exceptionality related to dyslexia: (1) neurodiversity – naturally occurring variations in human neurology, (2) possibility that special interests, practice or experience develop extraordinary strengths, that are not primarily connected to reading, (3) the brain in the early phases of neurodevelopment is wired in such a way that learning to read is difficult while learning in other ways is not. According to West (1997), evidence that supports or does not support the theory of twice-exceptionality of students with dyslexia can be researched from different positions: (1) anecdotal evidence, (2) hemispheric specialization theory (right hemisphere domination in people with dyslexia linked with nonverbal, holistic, spatial, creative, intuitive processing), (3) studies about the structure and function of the brains of people with dyslexia, (4) psychometric testing and (5) comparison studies of dyslexic and non-dyslexic persons.

Davis and Braun (1994), for the first time, introduced the possibility of a different view of dyslexia to the general public, thus sensitizing the public about the possible high abilities of 2e students with dyslexia. On the one hand, great professional achievement and recognition of 2e people with dyslexia that became famous had shifted the paradigm from their weaker academic achievement to their talents and high abilities in certain areas. Furthermore, it encouraged many students with dyslexia and their families in facing many challenges during their schooling. On the other hand, criticism of the medical model of dyslexia which is more focused solely on areas of weakness (Mortimore, 2008) and increased sensitivity for inclusive principles and values in society and education have influenced the better understanding of the strengths of people with dyslexia, as well as areas of high potential abilities. Unlike the medical point of view, which is important in diagnosing dyslexia and differentiating it from similar disorders (Vancaš & Jeličić, 2003), the social model emphasizes human rights, and in the educational context refers to adaptation of the educational environment to the needs of students with dyslexia, providing educational support and identifying potentials (Riddick, 2001; Vancaš & Jeličić, 2003). According to the social model, it should be pointed out that educational needs should be viewed in line with the environmental context that is liable to provide the resources and support that enable the full potential of each student.

Sometimes giftedness and compensation abilities can mask symptoms of dyslexia, and difficulties of many students may not be noticed in time (Silverman, 2005). Only in educational settings that are adjusted to the special needs of 2e students, is it possible for them to show their abilities (Gabor, 2009). On the other hand, there may be an underlying inadequacy and lack of experience in the educational systems to deal with the complexities and exceptionalities

of these students (Foley-Nicpon, Assouline, & Colangelo, 2013). Preservice teachers' beliefs about the characteristics of children with special educational needs, including 2e students with dyslexia are significantly related to preservice teacher education. A belief that students with dyslexia can have high abilities in some cognitive domains and that they can be gifted is a significant predictor of teachers' ability to recognize such students and to encourage their strengths, rather than focus only on supporting them in areas of their weaknesses. Results of previous research suggest that (preservice) teachers are informed and have positive beliefs about the possible giftedness of students with dyslexia (e.g., Wadlington & Wadlington, 2005). However, they do not feel sufficiently prepared to teach 2e students generally (Rowan & Townend, 2016).

In terms of terminology used in educational legislation, the label "2e students" is not recognized in main educational documents, such as *Primary and Secondary Education Act* (2008), *State Pedagogical Standard of the Primary School Education System* (2008), *Regulations on Primary and Secondary Education of Students with Developmental Disabilities* (2015), *Regulations on Primary Education of Gifted Students* (1990) and *National Curriculum Framework for Preschool Education, Compulsory and Secondary Education* (2011). The first use of the term "2e student" appears in the proposal of the national document prepared by the expert workgroup in the project of Comprehensive Curricular Reform in February 2016 (*National Framework Document for Encouraging Learning Experiences and Evaluating the Achievements of Gifted Children and Students (proposal)*, 2016). The term used for those students is gifted students with disabilities and is covered under gifted education. A short explanation of the process of their identification and planning individualised curriculum is provided in the mentioned document.

There is a lack of professional and scientific papers dealing with this issue. Therefore, the purpose of this research is to emphasise the importance of this topic in the Croatian educational context. To provide a broader perspective, it should be noted that in the Croatian education legalisation, as in worldwide educational policy, 2e students are guaranteed the right to an individualized program currently regulated through two separate documents on the education of gifted students and students with disabilities. Namely, according to the *Primary and Secondary Education Act* (2008), for the category of 2e students, special resources and a framework for the identification procedure are not provided in the curriculum. So, according to legislation, 2e students are recognised as students with special educational needs who have rights for individualized curriculum as gifted students and students with disabilities. Following the above, it can be pointed out that educational needs of a small population of 2e students in Croatia is underrepresented in legal documents, especially concern-

ing unified identification procedure, individualized curriculum and additional resources and support. To conclude, at this point the education of 2e students in Croatia is sparsely represented and education tailored to their unique educational needs seems a far-reaching process.

The main goal of this paper is to present findings from a pilot study designed to evaluate the measurement characteristics of the Beliefs about Twice-Exceptional Students with Dyslexia Scale. In particular, we wanted to examine the factor structure and reliability of this scale. In addition to that, we wanted to determine whether different generations of students, from first-year students to the final-year students enrolled at the Teacher Education Study Program delivered by University of Rijeka, Faculty of Teacher Education differ in their beliefs about the high abilities of 2e students with dyslexia.

Method

Participants

A convenience sample of 159 students of all academic years (97.5% female, Age: M = 20.67; SD = 1.67) from the Teacher Education Study Program at the University of Rijeka, Faculty of Teacher Education participated in this pilot study.

Measures

In the initial phase, the first version of Beliefs about Twice-Exceptional Students with Dyslexia Scale was constructed. The questionnaire includes information about socio-demographic variables (gender, age and year of study). Beliefs about Twice-Exceptional Students with Dyslexia Scale contains 15 items that describe specific areas of high cognitive abilities of 2e students with dyslexia. As mentioned earlier, empirical research on 2e students with dyslexia is still relatively rare. This paper presents one of the first attempts to empirically research this topic in the Republic of Croatia and our review of the international publications revealed a relatively small number of available scientific papers about 2e students with dyslexia. Therefore, in the initial phase of item creation and selection, all available sources were considered, including scientific, professional papers, popular articles and theoretical literature reviews in which authors write about various potential strengths of students with dyslexia. The scale has a Likert-type response format ranging from 1: "I do not agree at all" to 5: "I completely agree". Each item has an introductory text highlighted at the beginning of the scale ("Compared to other students, some students with

dyslexia may have the following abilities more developed …"). Eight items are related to high abilities in innovative, creative and artistic thinking (e.g., "… original and creative thinking", "… artistic expression"), six items describe high abilities in visual learning and processing (e.g., "… visual learning", "… visual-spatial memory"), one item is related to motor performance and focus on active sports. Component analysis presented in the subsequent chapters suggested a tentative possibility for two distinct set of items: one related to innovative, creative and artistic thinking and another related to visual learning and processing abilities. The internal consistency reliability coefficient (Cronbach alpha) was 0.88 and 0.85 respectively. Further analyses in this study were made on the single construct scale with high reliability (Cronbach alpha = 0.9).

Procedure

The survey was conducted at the beginning of the academic year 2019/20 through the online Limesurvey platform among students of all five years from the integrated bachelor and master Teacher Education Study Program at the University of Rijeka, Faculty of Teacher Education. Students provided their responses during regular classes, using their smartphones. For students who could not access the questionnaire through smartphones, access was provided in the computer rooms.

Data analysis

Descriptive statistics were used to describe the basic statistical indicators on variables. Component analysis with principal components method for component extraction and direct oblimin rotation of extracted components was performed to determine the latent component structure of the analysed set of items. In determining significant components, Cattell's scree plot and Kaiser criterion were used. The scale reliability was tested with Cronbach alpha analysis of the internal consistency type. The univariate Analysis of variance test was performed in order to determine the differences between different groups of preservice teachers in their beliefs about 2e students with dyslexia.

Results

The results of the descriptive analysis indicate that preservice teachers have positive beliefs about the high abilities of 2e students with dyslexia (M = 3.85; SD = 0.64) across all items of the scale (Table 1). Compared to all observed items, the greatest dispersion of responses suggests that they differ mostly in beliefs about the high abilities in motor skills and active sports, artistic expres-

Table 1. *Descriptive data for scale items*

Beliefs about Twice-Exceptional Students with Dyslexia Scale	*N*	Min	Max	*M*	*SD*
TE09 ... original and creative thinking	159	1	5	4.19	1.014
TE02 ... imagination, pictorial thinking and imagining	159	1	5	4.15	.936
TE08 ... artistic expression (e.g., music, dance, drawing or acting)	159	1	5	4.13	1.091
TE03 ... visual - spatial memory	159	1	5	4.06	.943
TE10 ... expressing ideas and feelings	159	1	5	3.99	1.049
TE14 ... vivid event memories (intensive sensory experience of sounds, colours, tactile sensations and emotions)	159	1	5	3.99	.904
TE06 ... visual representation of space	159	1	5	3.91	.996
TE07 ... visual learning	159	1	5	3.81	1.007
TE15 ... research thinking/reflection	159	1	5	3.80	.960
TE05 ... motor performance and focus on active sports	159	1	5	3.75	1.112
TE12 ... advanced use of technology (called "computer whiz")	159	1	5	3.69	.988
TE11 ... verbal reasoning	159	1	5	3.65	.988
TE01 ... organization of sensory stimulus into a unified perception	159	1	5	3.62	.832
TE13 ... visualizations in three dimensions	159	1	5	3.62	.899
TE04 ... rapid visual - perceptual processing	159	1	5	3.48	1.078

N – number of respondents; *M* – arithmetic mean; Min – minimum value; Max – maximum value; *SD* – standard deviation

sion and rapid visual-perceptual processing. The highest average result was obtained on the item about high abilities in original and creative thinking. In addition to this item, students mostly agreed with all other items of the scale, except with the item about high abilities in the field of rapid visual-perceptual processing, with which they agreed moderately.

Preliminary results indicated that the scale has satisfactory psychometric characteristics. The exploratory component analysis with Cattell scree plot criteria for retention of significant factors (eigenvalues = 6.408, 1.888, 1.009, 0.819, 0.767…) provided evidence for a single construct measure with a tentative possibility for differentiation of two separate sets of items: first related to innovative, creative and artistic thinking and the second related to visual learning and processing abilities. The factor analysis solution with two retained factors accounted for 55.30% (42.72% - the first factor, 12.59% - the second

Table 2. *Factor structure of the Beliefs about Twice-Exceptional Students with Dyslexia Scale*

FACTOR 1: Innovative, creative and artistic thinking	h^2	β
TE10 ... expressing ideas and feelings	.705	.900
TE09 ... original and creative thinking	.660	.846
TE08 ... artistic expression (e.g., music, dance, drawing or acting)	.580	.774
TE15 ... research thinking/reflection	.661	.769
TE11 ... verbal reasoning	.523	.718
TE14 ... vivid event memories (intensive sensory experience of sounds, colours, tactile sensations and emotions)	.571	.711
TE05 ... motor performance and focus on active sports	.441	.581
TE12 ... advanced use of technology (called *"computer whiz"*)	.256	.436
FACTOR 2: Visual learning and processing abilities		
TE04 ... rapid visual - perceptual processing	.642	.875
TE07 ... visual learning	.544	.777
TE03 ... visual - spatial memory	.611	.735
TE06 ... visual representation of space	.589	.665
TE02 ... imagination, pictorial thinking and imagining	.585	.649
TE01 ... organization of sensory stimulus into a unified perception	.487	.501
TE13 ... visualizations in three dimensions	.460	.491

h^2 – communality; β – factor saturation from the pattern matrix (only saturations above 0.3 are shown)

factor) of the variance regarding the entire space of manifest variables. Factorial communalities and saturations are shown in Table 2.

The first factor called *Innovative, creative and artistic thinking* consists of eight statements with highest saturation on abilities of 2e students with dyslexia in expressing ideas and feelings, original and creative thinking, artistic expression in different fields, research thinking/reflection, verbal reasoning and vivid memory of events. The average saturation is on items about high abilities in the field of motor performance and focus on active sports and the advanced use of technology.

The second factor associated with high abilities in visual domain is called *Visual learning and processing* and consists of seven statements. The highest saturations were on high abilities in rapid visual-perceptual processing and visual learning, visual-spatial memory, visual representation of space and imagination, pictorial thinking and imagining, and medium saturation were in high abilities in organization of sensory stimulus into a unified perception and 3D visualizations.

Table 3. *Differences in preservice teachers' beliefs about twice-exceptional students with dyslexia according to the year of Teacher Education Study Program*

Year	*N*	*M*	*SD*	*F*	*df*1, *df*2	*p*	Post Hoc*
1st	40	3.530	.603				(3rd,4th,5th) *
2nd	32	3.671	.511				(4th) *
3rd	36	3.980	.670	7.341	4, 154	.000	(1st) *
4th	23	4.223	.616				(1st, 2nd) *
5th	28	4.071	.532				(1st) *

*statistically significant differences between groups determined by Post Hoc analysis with Bonferroni correction

As expected, the positive correlation between these two factors was established ($r = .452$, $p < .000$). Higher level of preservice teachers' beliefs that 2e students with dyslexia have high abilities in innovative, creative and artistic thinking are related to higher level of beliefs about high abilities in visual learning and processing.

The results presented in Table 3 indicate that there are statistically significant differences among students of different years of the Teacher Education Study Program in their beliefs about 2e students with dyslexia. Post-hoc analyses among the different subgroups identified that students from higher years of Teacher Education Study Program had significantly higher scores when compared with students from the first two years. More specifically, students in years 3, 4, and 5 show more positive beliefs about 2e students with dyslexia compared to year 1 students, and year 4 students also compared to year 2 students (Table 3).

Discussion

Presented preliminary findings in measuring preservice teachers' beliefs about 2e students with dyslexia demonstrated that the construct is valid as one factor structure, with potential for two-factor structure. Generally, higher values obtained on teacher beliefs about 2e students with dyslexia suggest that preservice teachers are aware of the strengths that some children with dyslexia have, especially students from 3rd to 5th year of Teacher Education Study Programme.

The highest average values were obtained on items about the high abilities in original and creative thinking, pictorial thinking/imagining and artistic expression (e.g., music, dance, drawing or acting). The results are not surprising, since creativity, pictorial thinking and a tendency to express themselves

in different fields of art are the most frequently mentioned strengths of people with dyslexia (Eide & Eide, 2011). Research also confirms their higher results on original thinking and creativity tasks compared to non-dyslexics (Cancer et al., 2016; Tafti et al., 2009). Natural talent for one or more of the arts such as music, dance, drawing or acting (Chakravarty, 2009) confirms the fact that the incidence of dyslexia is far higher among art students (Wolff & Lundberg, 2002). Preservice teachers also demonstrated high average results on other items related to visual learning and processing. They generally agreed that 2e students with dyslexia have well-developed visual-spatial memory. Some research confirms that on pictorial-spatial subtests of memory, students with dyslexia perform better than students without dyslexia (Tafti et al., 2009). Intrinsic motivation and devotion of 2e students with dyslexia to activities involving well-developed visual-spatial skills (such as building with Lego material) with unique and complex new design solutions, their ability to clearly visualize the three dimensions and organize a sensory stimulus into a unified perception are also described in the literature (Armstrong, 2010; Eide & Eide, 2011; LaFrance, 1997). A case study reported by Cooper, Ness and Smith (2004) provided an anecdotal example of a 2e boy with dyslexia with superior scores on tasks that include the organization of visual perceptions, forming spatial concepts, and effectively deploying visual-motor skills to analyse and reconstruct abstract visual designs. Preservice teachers in our research have also recognized these strengths of students with dyslexia. Despite numerous anecdotal examples of high abilities in the field of visual-perceptual processing, with which the students in our study agreed, empirical evidence is still inconsistent. While some authors claim that the results on visual perceptual processing patterns are dramatically higher in the 2e with dyslexia group compared to the peer control group (Bireley, Languis, & Williamson, 1992), others deny the existence of high abilities in this area (Winner et al., 2001). Dyslexic students' preference for visual materials for learning and preferred visual learning style are well known (Exley, 2004) and are determined by the dominant input channel of reception and the way the information is processed in the brain (Galić-Jušić, 2004; Sunko, 2008). The use of images, cognitive maps, graphic representations and visualization are one of the basic methodological principles of teaching students with dyslexia (Galić-Jušić 2004; Ivančić, 2010). Information about preservice teachers' positive beliefs about the visual learning of 2e with dyslexia has a strong pedagogical significance on how they will teach in the future.

Superiority in expressing ideas and feelings is one of the strengths of 2e students with dyslexia (Shaywitz & Shaywitz, 2003), also recognized by preservice teachers. Individuals with dyslexia can have good speaking skills and appear in the media as motivational speakers advocating for the rights of people with

dyslexia. Despite their primary deficits in the verbal domain, some 2e students with dyslexia express good results on some verbal reasoning tasks. These students show better results in reading, spelling, morphological, and syntactic skills when compared to students with dyslexia and average verbal reasoning, but they do not outperform them on verbal working memory markers related to impaired phonological and orthographic processing which is immanent to dyslexia (Berninger & Abbott, 2014). Intensive sensory experience of sounds, colours, tactile sensations and emotions enables 2e students with dyslexia to create vivid memories of different events and experiences (Eide & Eide, 2011). They can have a special interest for science and how things are functioning and are advanced in the use of technology (Mann, 2001; Montgomery, 2003). They are also often recognized in the ICT sector as professionals who bring new and creative solutions (Silverman, 2005). Less known, but still observed strength of some 2e students with dyslexia are superior motor achievements in various sports (Shaywitz, 2008).

Preservice teachers' positive beliefs about 2e students with dyslexia and awareness of their strengths can be partially compared with the findings of previous research on beliefs and attitudes about gifted students (Allodi & Rydelius, 2008) and students with dyslexia (Gwernan-Jones & Burden, 2010). The results indicate that preservice teachers view dyslexia as specific neurodiversity and understand the specific cognitive functioning of people with dyslexia, which, with specific limitations, also includes potential benefits.

Although preservice teacher education in the Republic of Croatia is still insufficient to meet the needs of all subgroups of special educational needs students (Skočić Mihić, Lončarić, & Bažon, 2019), the differences in results among students from different academic years indicate a significant impact of the experiences that students gain by progressing through the study program. It is obvious that positive beliefs about 2e students with dyslexia became more prominent as students advance through the study course about inclusive education that was the case for year 3 to year 5 students. Students from third to fifth year of Teacher Education Study Program hold more positive beliefs about the abilities of 2e students with dyslexia compared to first- and second-year students. Unlike younger students, students from third to fifth year attended a course about inclusive education. Furthermore, fourth- and fifth-year students also attended additional lectures (a total of six hours) about specific learning disorders held by a guest lecturer – a speech and language therapist.

Strengths and specific skills of people with dyslexia are desirable for many modern, 21st century professions (Addison, Spoors, & Cooke, 2018). For that reason, the responsibility of educational systems for success or potential failure of 2e students is indisputable. The importance of early identification and

systematic monitoring of 2e students with dyslexia, which includes speech and language therapists, psychologists, teachers and other professionals involved in the education of these children, is unquestionable. 2e students with dyslexia need an individualized and differentiated curriculum, well balanced between fostering their strengths and providing adequate support. It is important that teachers understand the specific learning style of 2e students with dyslexia, provide learning tasks that include advanced concepts specially from the domains in which students excel and to appreciate creative ideas and solutions that 2e students bring to different learning situations (Silverman, 2005). It is equally important to provide additional support in areas where these students encounter challenges, and to consider the specific reading and writing problems, speed processing problems, and the potential socio-emotional difficulties of this group of students. Awareness about potential twice-exceptionalities of students with dyslexia and competencies about teaching them that preservice teachers acquire during their initial education and professional development are crucial in meeting the needs and individualized teaching of these students (Matthews & Dai, 2014).

This pilot study has dealt with a complex concept of teacher beliefs about 2e students with dyslexia that has not been empirically explored so far. In the interpretation of the results, limitations related to the possible socially desirable responses of participants should be considered. Although the psychometric test of the scale indicates a one-factor structure of high reliability, in further research, a proposed two-factor structure of the scale should be revised and supplemented with new items that more clearly describe the affiliation to a particular scale factor, taking into consideration subscales discriminant validity and reliability. For this purpose, further research should also include experts in speech and language pathology who will conduct qualitative analysis and screening of those items and evaluate them on the basis of empirical scientific evidence.

Conclusion

The contribution of this research is twofold: first and foremost, in the scientific approach to the measurement of investigated construct and additionally in illuminating preservice teacher's beliefs about the potential of twice-exceptional students. In further studies, it is necessary to elaborate the existing scale items according to the proposed two-factor structure and to determine its discriminant validity and reliability. The research confirmed the importance of initial teacher education in creating positive beliefs about 2e students with dyslexia. Further longitudinal research needs to examine the possibility that

positive beliefs about twice-exceptional students with dyslexia are more prominent as students advance through the study program. Future research should also investigate preservice teachers' specific knowledge and skills for inclusive teaching that respects 2e students' difficulties but also provides more challenging learning opportunities in domains where they can demonstrate their high abilities.

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Croatian validation of the multidimensional measures of work–family conflict and work-family enrichment among working fathers

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Abstract

The multidimensional measures of Work-Family Conflict (Carlson et al., 2000) and Work-Family Enrichment Scale (Carlson et al., 2006) assess the negative and positive sides of work-family interface. Work-family conflict is a form of inter-role conflict, in which two domains are mutually incompatible to some extent, while work-family enrichment refers to the enhanced role performance in one domain as a function of resources gained from another domain. Both scales acknowledge work-to-family and family-to-work directions.

This study aimed to test the factor structure, reliability, and divergent validity of the two instruments in a Croatian sample of fathers. The participants, 170 fathers of infants, completed an online questionnaire which included the Work-Family Conflict Scale (WFCS), the Work-Family Enrichment Scale (WFES), and a set of questions on demographic data.

The results of the confirmatory factor analysis (CFA) for the Work-Family Conflict Scale showed the best fit for the six-factor model. Therefore, this

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scale consists of time, strain, and behaviour-based dimensions for both work-to-family and family-to-work aspects. The internal consistency reliability coefficients were high for the six subscales of the WFCS (α = .79 - .92).

The CFA for the Work-Family Enrichment Scale also had a very good fit for the six-factor model. The WFES comprised development, affect, and capital-based work-to-family subscales and development, affect, and efficiency-based family-to-work subscales. The internal consistency reliability coefficients were very high for all subscales of the WFES (α = .94 - .98).

Finally, the correlational analysis between all subscales from Work-Family Conflict and Work-Family Enrichment scales suggested that these two measures share only a minor proportion of variance. Therefore, we can conclude that the Croatian version of both the WFCS and WFES are valid and reliable instruments that capture different aspects of the work-family interface.

Keywords: work-family conflict, work-family enrichment, validation, fathers

Introduction

Contemporary research puts a strong emphasis on how people balance work and family life. Work-family interface broadly refers to the positive and negative aspects of the influence these two important life domains have on each other. The negative domain refers to the work-family conflict, while the positive is mostly conceptualized as work-family enrichment (Kinnunen, Feldt, Geurts, & Pulkkinen, 2006).

Work-family conflict is a form of inter-role conflict, in which the role pressures from the work and family domains are mutually incompatible in some respect (Greenhaus & Beutell, 1985). The source of conflict can be in either of the domains so we can distinguish between the work-to-family conflict (WIF) and family-to-work conflict (FIW). Greenhaus and Beutell (1985) acknowledge three forms of conflict that can be rooted in both domains: time-based, strain-based, and behaviour-based. The time-based conflict appears as a result of time pressures in one role which can disable a person from performing well in the other. For example, employees working long hours cannot participate in household activities. The strain-based conflict is experienced by people with high levels of strain or fatigue in one of the roles that influence the other. For instance, parents with infants can be sleep-deprived and exhausted which in turn leads to poorer work performance. The behaviour-based conflict appears when behaviours in two roles are mutually incompatible. Employees working as supervisors, for instance, may show high authority and power but these behaviours are not expected and supported by family members in everyday life.

Work-family enrichment refers to the degree to which experiences in the family role improve the quality of life in the work role, and vice versa (Greenhaus & Powell, 2006). Just as in the work-family conflict, enrichment can

originate from both life roles, so we can distinguish between work-to-family enrichment (WFE) and family-to-work enrichment (FWE). Enrichment can be experienced through an instrumental or affective path (Kacmar, Crawford, Carlson, Ferguson, & Whitten, 2014). The instrumental path includes the direct effects of one role on another by improving performance. The affective path is an indirect impact of one role on another through positive emotional states. Work-family enrichment was neglected for a long time compared to extensive research on work-family conflict (e.g., Ford, Heinen, & Langkamer, 2007; Mesmer-Magnus & Viswesvaran, 2005; Shockley & Singla, 2011). However, considerable research in recent years has revealed the importance of work-family enrichment for work-related (Moazami-Goodarzi, Nurmi, Mauno, & Rantanen, 2015), family-related (Van Steenbergen, Kluwer, & Karney, 2014), well-being and health-related outcomes (Jaga, Bagraim, & Williams, 2013).

Development and measurement of the work-family conflict

Three phases can be identified in the development of measures that align with the understanding of what the work-family conflict represents. In the first phase, the authors developed measures that were unidirectional, considering only the conflict which emerges when the work role interferes with the family role (e.g., Rice, Frone, & Mcfarlin, 1992). The second phase was marked by the consideration of both WIF and FIW (e.g., Netemeyer, Boles, & McMurrian, 1996). And finally, in the third phase, researchers recognized the importance of different forms within both the WIF and FIW (e.g., Carlson, Kacmar, & Williams, 2000).

Although the three forms of work-family conflict were acknowledged in Greenhaus and Beutell's (1985) description of the construct, the first instrument to capture it, along with the two directions of a conflict, was developed 15 years later by Carlson et al. (2000). Therefore, the multidimensional Work-Family Conflict Scale (WFCS) consists of (1) *time-based*, (2) *strain-based* and (3) *behaviour-based* WIF, and (4) *time-based*, (5) *strain-based* and (6) *behaviour-based* FIW (Carlson et al., 2000). The proposed structure showed a better fit of the data compared to the one-factor model, a two-factor model that only distinguishes two directions of conflict, and a three-factor solution that differentiates between three forms of conflict regardless of the direction of conflict. Also, the dimensions show different associations with several antecedents and outcomes, such as job, family, life satisfaction and organizational commitment. The WFCS was validated in numerous countries such as Iran (Karimi, 2008), Slovenia (Tement, Korunka, & Pfifer, 2010), Korea (Lim, Morris, & McMillan, 2011), Portugal (Vieira, Lopez, & Matos, 2014), Hungary (Ádám & Konkolÿ Thege, 2017), Italy (Loscalzo, Raffagnino, Gonnelli, & Giannini, 2019), and

Argentina (Pujol-Cols, 2019). All these validations demonstrated the original factor structure with high internal consistency of the dimensions.

Development and measurement of work-family enrichment

Unlike work-family conflict, the measurement of work-family enrichment is much less clear. This is mostly the result of different conceptualizations of similar constructs that are often used interchangeably such as positive spillover (Crouter, 1984), facilitation (Wayne, Grzywacz, Carlson, & Kacmar, 2007), and enhancement (Sieber, 1974). The differentiation between the constructs is subtle but existing. For example, positive spillover includes a transfer of experiences such are moods, skills, values, and behaviour (Wayne, 2009), while enrichment is accomplished if these experiences are not only transferred but there is also an improvement in the affect or performance of an individual (Carlson, Kacmar, Wayne, & Grzywacz, 2006). Facilitation, as well as enrichment, includes the improvement of another life domain through the experience made in the first one (Wayne et al., 2007). However, while facilitation includes improvement in system functioning (e.g., family functioning, work-group function), enrichment focuses on the individual. Finally, enhancement refers to gained resources and experiences that can improve the way a person faces life challenges with only a possibility of benefits across the life domains.

Due to conceptual confusion, much early research was based on *ad hoc* measures without a theoretical background (Casper, De Hauw, & Wayne, 2013). Carlson et al. (2006) developed a scale that captures different ways in which the family role can enrich the work role and vice versa. The WFES consists of (1) a *development-based* subscale that captures improvement of the quality of family life because of acquisition of skills and knowledge at work, (2) an *affect-based* subscale that captures family life improvements because of the positive emotional state or attitude at work, and (3) a *capital-based* subscale that refers to family enrichment rooted in security, confidence, or self-fulfilment acquired at work. The FWE consists of the (4) *development-based,* (5) *affect-based*, and (6) *efficiency-based* subscales. The development-based and affect-based subscales capture the same effects as in the WFE scales but in the opposite direction. The efficiency-based subscale captures positive experience and gains made in family life that improve the sense of focus and urgency at work. Validation studies in Slovenia (Tement et al., 2010), Korea (Lim, Choi, & Song, 2012), Portugal (Vieira et al., 2014), and Canada (Bourdeau & Houlfort, 2015) show high reliability and factor structure as in the initial validation from the USA (Carlson et al., 2006).

Work-family conflict, work-family enrichment and work and family-related characteristics

For a long time, work-family balance was conceptualized as the absence of conflict (Carlson, Grzywacz, & Zivnuska, 2009; Frone, 2003). However, contemporary research acknowledges the importance of work-family enrichment as a different aspect of the work-family interface. Both conflict and enrichment reflect the ways in which work influences family roles, and vice versa – either positively or negatively. Intuitively, one could expect that conflict and enrichment should be correlated. However, most of the research shows low or non-existing correlations (Carlson et al., 2009; Greenhaus & Powell, 2006; Tement et al., 2010), which implies different underlying processes. Work-family conflict can be seen as a stressor, while enrichment can represent a developmental phenomenon (Vieira et al., 2014).

Work and family characteristics are important to consider when investigating the work-family interface, since they can facilitate or obstruct the development of conflict or enrichment. Work-related aspects are more important for the work-to-family direction than family-to-work direction and this refers both to conflict and enrichment (see Byron, 2005, Lapierre et al., 2018). For example, some research shows that work-to-family conflict is higher in shift workers (e.g., Šimunić & Gregov, 2012) and those with higher work-demands (Michel, Mitchelson, Kotrba, LeBreton, & Baltes, 2009). Furthermore, since this research focuses on fathers of infants, it is important to consider whether work-family conflict and work-family enrichment differ among parents with one child or several children. It has been shown that the number of children is related to FIW (Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011) and FWE (Lapierre et al., 2018).

Current research

Research in several countries mostly confirmed the validity and reliability of both WFCS and WFES. However, some authors suggested advancing the understanding of work-family conflict and enrichment within specific samples. For example, Tement et al. (2010) stressed the importance of examining work-family dynamics in employees with different family responsibilities, such as those with children. In this study, we focused on fathers with infants. Workers with infants can have trouble adjusting to the new situation since the family routine is often unpredictable and mothers need additional support while, at the same time, work-related obligations may not change (Cooklin et al., 2015).

Furthermore, this study adds to the cross-cultural investigation of work-family interface. Work-family conflict was investigated in the Croatian con-

text (e.g., Jelušić & Maslić Seršić, 2005; Matijaš, Merkaš, & Brdovčak, 2018; Šimunić, 2017). However, the authors mostly used the scales that consider bi-directionality of work-family conflict, but not different dimensions thereof. The exception is the paper by Maslić Seršić and Kurtović (2020) which investigated the mediational role of the time-based and strain-based WIF in the relationship between the number of working hours and psychophysical health of working parents. Also, to the author's best knowledge, work-family enrichment has not been investigated in Croatia so far. We believe that this validation study will encourage further examinations of the work-family interface in the Croatian context, by taking into consideration not only work-family conflict but also work-family enrichment.

Therefore, the aim of this research is to validate both the WFCS and WFES by testing factor structure, reliability, divergent, and discriminant validity of the two instruments in a Croatian sample of fathers. We expect that: (1) both the WFCS and WFES scales will have a 6-factor structure as in the initial validations (Carlson et al., 2000, 2006); (2) all subscales will have high reliability, (3) the subscales of the WFCS and WFES will not be correlated or will have low intercorrelations, and (4) WIF and WFE dimensions will differentiate fathers based on work-related characteristics, that is, supervisor position, shift work and overtime work, while FIW and FWE dimensions will differentiate fathers based on the number of children.

Method

Participants

The sample comprised 170 employed fathers of infants (1-12 months old). The average age was $M = 33.19$ years ($SD = 5.63$). Most of the men were married (91.9%), and the rest were living in cohabitation. All participants had children and most of them had one child (61.2%). Most men (51.8%) had completed some type of higher education (e.g., a master's degree or a PhD). Of the total sample, 29.4% worked as supervisors or managers, 26.5% of the participants worked in shifts, and 61.2% worked overtime.

Instruments

The Work-Family Conflict Scale – WFCS (Carlson et al., 2000) consists of 18 items that measure six dimensions of conflict: time-based WIF ("I have to miss family activities due to the amount of time I must spend on work re-

sponsibilities.") and FIW ("I have to miss work activities due to the amount of time I must spend on family responsibilities."), strain-based WIF ("I am often so emotionally drained when I get home from work that it prevents me from contributing to my family."), and FIW ("Due to stress at home, I am often preoccupied with family matters at work."), and behaviour-based WIF ("Behaviour that is effective and necessary for me at work would be counterproductive at home."), and FIW ("The behaviours that work for me at home do not seem to be effective at work."). All items were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The original validation (Carlson et al., 2000) confirmed a 6-factor structure of the instrument, with Cronbach's α ranging from .78 (behaviour-based WIF) to .87 (time-based WIF).

The Work-Family Enrichment Scale - WFES (Carlson et al., 2006) consists of 18 items that measure six dimensions of enrichment: development-based WFE ("My involvement in my work helps me acquire skills and this helps me be a better family member.") and FWE ("My involvement in my family helps me to develop my abilities and this helps me be a better worker."), affect-based WFE ("My involvement in my work makes me feel happy and this helps me be a better family member."), and FWE ("My involvement in my family helps me feel good and this helps me be a better worker."), capital-based WFE ("My involvement in my work helps me feel personally fulfilled and this helps me be a better family member."), and efficiency-based FWE ("My involvement in my family causes me to be more focused at work and this helps me be a better worker."). All items were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Carlson et al. (2006) confirmed that the 6-factor model, with the aforementioned dimensions, had a good fit. In the same study, Cronbach's α coefficients ranged from .73 (development-based WIF) to .91 (affect-based WIF).

The participants provided the following *demographic data*: age, marital status, the number of children, and education level. They also answered *work-related questions* about working in shifts (*yes/no*), working overtime (*yes/no*), and work position (1-*employee*, 2-*higher management*, 3-*supervisor*).

Translation process

The WFCS and WFES were back-translated by two independent bilingual researchers using the back-translation method (Brislin, 1970). One researcher translated the scales into Croatian after which another independent researcher translated them back into English. These versions were compared so that any issues regarding the translated version were identified and corrected.

Procedure

The present study was conducted as part of the project entitled *Parental mental health and contextual factors as determinants of parent-infant bonding*, which had been approved by the Ethical Committee of the Catholic University of Croatia. The questionnaires were administrated online from May to December 2018 using Google forms. Participants were recruited using the snowballing method through social networks (e.g., Facebook group for the employed), groups for parents, and personal contacts. Also, mothers that participated in the project were asked to forward the questionnaire link to their partners. Participants were informed about the purpose of the study, its anonymity, and the right to withdraw at any time at no cost. By clicking on the "next" button they gave their informed consent.

Statistical analyses

Before conducting the analyses, we had screened the data for multivariate and univariate outliers and checked the normality of distribution, excluding the items with skew index above 3 and kurtosis index above 8 (Kline, 2011). Due to the settings of the online survey, there was no missing data. The CFA analyses were conducted using Mplus 8.1 (Muthén & Muthén, 1998-2017), adopting the maximum likelihood (ML) estimation procedure. In each model, we allowed the factors to correlate freely. Latent factors were scaled using the marker-variable method (Little, 2013). Several fit indices were used to evaluate the models: Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR). The RMSEA below .06, and SRMR below .08 indicated a good fit. The RMSEA below .08 indicated an acceptable fit. CFI values higher than .90 and .95 indicated acceptable and good fit, respectively (Hu & Bentler, 1999). Also, we provided $\chi 2$ for each model. We used a Chi-square difference test to compare alternative models. Reliability was examined as the internal consistency using Cronbach's α coefficient. Divergent validity was tested using Pearson's correlation coefficient. Discriminant validity was examined by the known-groups differences with a series of independent *t*-tests. These analyses were conducted in SPSS Statistics 21.0 for Windows.

Results

Item analysis

Descriptive statistics for individual items of the WFCS and WFES are presented in Table 1. On average, on all items, the fathers reported the conflict below mid-point and the enrichment above the mid-point on a 5-point Likert

Table 1. *Descriptive statistics of individual items of the WFCS and WFES*

Work-Family Conflict Scale						Work-Family Enrichment Scale					
Dimension	Item	Range	*M*(*SD*)	Skewness	Kurtosis	Dimension	Item	Range	*M*(*SD*)	Skewness	Kurtosis
Time-based WIF	WFCS1	1-5	2.94 (1.35)	0.03	-1.15	Development-based WFE	WFES1	1-5	3.24 (1.25)	-0.38	-0.77
	WFCS2	1-5	2.95 (1.37)	0.02	-1.18		WFES2	1-5	3.25 (1.20)	-0.34	-0.66
	WFCS3	1-5	2.68 (1.34)	0.17	-1.19		WFES3	1-5	3.21 (1.17)	-0.22	-0.69
Time-based FIW	WFCS4	1-5	2.15 (1.11)	0.48	-0.84	Affect-based WFE	WFES4	1-5	3.05 (1.20)	-0.11	-0.70
	WFCS5	1-5	2.02 (1.09)	0.67	-0.70		WFES5	1-5	3.16 (1.23)	-0.12	-0.87
	WFCS6	1-5	1.93 (1.02)	0.89	0.09		WFES6	1-5	3.07 (1.23)	-0.10	-0.81
Strain-based WIF	WFCS7	1-5	2.46 (1.15)	0.38	-0.64	Capital-based WFE	WFES7	1-5	3.21 (1.24)	-0.28	-0.87
	WFCS8	1-5	2.28 (1.23)	0.61	-0.70		WFES8	1-5	3.42 (1.23)	-0.53	-0.54
	WFCS9	1-5	2.42 (1.17)	0.44	-0.73		WFES9	1-5	3.39 (1.25)	-0.48	-0.71
Strain-based FIW	WFCS10	1-5	1.72 (0.88)	0.99	0.26	Development-based FWE	WFES10	1-5	3.43 (1.20)	-0.42	-0.71
	WFCS11	1-5	1.62 (0.91)	1.55	1.98		WFES11	1-5	3.28 (1.18)	-0.20	-0.75
	WFCS12	1-5	1.53 (0.87)	1.73	2.67		WFES12	1-5	3.32 (1.22)	-0.29	-0.78
Behaviour-based WIF	WFCS13	1-5	2.42 (1.24)	0.45	-0.76	Affect-based FWE	WFES13	1-5	3.72 (1.18)	-0.71	-0.26
	WFCS14	1-5	2.34 (1.20)	0.49	-0.63		WFES14	1-5	3.82 (1.20)	-0.89	-0.03
	WFCS15	1-5	2.38 (1.25)	0.49	-0.75		WFES15	1-5	3.76 (1.19)	-0.83	-0.12
Behaviour-based FIW	WFCS16	1-5	2.45 (1.21)	0.44	-0.66	Efficiency-based FWE	WFES16	1-5	3.47 (1.12)	-0.37	-0.38
	WFCS17	1-5	2.23 (1.13)	0.56	-0.45		WFES17	1-5	3.49 (1.14)	-0.47	-0.40
	WFCS18	1-5	2.46 (1.18)	0.39	-0.62		WFES18	1-5	3.42 (1.12)	-0.26	-0.54

scale. Items had the full range of answers on the Likert scale. The results were normally distributed.

Confirmatory factor analyses

Work-family conflict scale

Before carrying out the analyses, we had excluded eight participants as multivariate and/or univariate outliers. Therefore, the CFA for the WFCS was obtained on 162 participants. We compared the 6-factor model of the WFCS which was obtained in the original validation study (Carlson et al., 2000) with the 1-factor model, 2-factor model, and 3-factor model. The 1-factor model represented general work-family conflict that does not differentiate the direction of the influence between work and family domains. All items loaded on the same factor. The 2-factor model was specified to differentiate between WIF and FIW directions of conflict, which is often measured in other instruments (e.g., Netemeyer et al., 1996). In this model, items 1-3, 7-9, and 13-15 loaded on the WIF factor and items 4-6, 10-12, and 16-18 loaded on the FIW factor. Finally, we specified the 3-factor model based on the three sources of conflict i.e., time, strain, and behaviour conflict (Greenhaus & Beutell, 1985). Items 1-6 loaded on the time-based factor, items 7-12 loaded on the strain-based fac-

Table 2. *Model comparisons for the Work-Family Conflict Scale (N = 162) and the Work-Family Enrichment Scale (N = 161)*

Model	$\chi 2$ (*df*)	RMSEA	CFI	SRMR	$\Delta\chi 2$ (Δdf)[a]
Work-Family Conflict Scale					
One-factor model	1208.66 (135)	.22	.50	.14	974.61** (15)
Two-factor model	1025.97 (134)	.20	.59	.18	791.92** (14)
Three-factor model	680.90 (132)	.16	.75	.12	446.85** (12)
Five-factor model	243.11 (125)	.08	.95	.06	9.06 (5)
Six-factor model	234.05 (120)	.08	.95	.06	-
Work-Family Enrichment Scale					
One-factor model	2027.30 (135)	.30	.59	.10	1845.99** (15)
Two-factor model	1258.24 (134)	.23	.76	.08	1076.93** (14)
Four-factor model	1211.40 (129)	.23	.76	.15	1030.09** (9)
Six-factor model	181.31 (120)	.06	.99	.02	–

Note: [a]For the Work-Family Conflict Scale, the six-factor model was compared with the one-factor, two-factor, three-factor, and five-factor model. For the Work-Family Enrichment Scale, the six-factor model was compared with the one-factor, two-factor, and four-factor model.
**$p < .01$

tor, and items 13-18 loaded on the behaviour-based factor. Modifications were not applied in either of the specified models, that is, there were no correlations between items' residuals.

The fit indices for the one-factor model, two-factor model, and three-factor model showed poor fit of the data (Table 2). Therefore, these models were rejected. The 6-factor model showed good fit of the data ($\chi 2/df$ = 1.95, RMSEA = .08, SRMR = .06, CFI = .95), with only the RMSEA above the cut-off point. However, some authors accept the RMSEA value below .08 as an indication of a good model (see Schreiber, Nora, Stage, Barlow, & King, 2006). There was a high correlation (r = .98) between the subscales of behaviour-based WIF and FIW. Therefore, we tested a model that included five factors, in which two forms of behaviour-based conflict were combined into a single factor. This model showed a good fit ($\chi 2/df$ = 1.95, RMSEA = .08, SRMR = .06, CFI = .95). We tested whether these two models were statistically different. Given that there was no significant difference between the 6-factor model and the 5-factor model ($\Delta\chi 2$ = 9.06, Δdf = 5, p = .11), we accepted the theoretically assumed model. This model consists of 6 factors: time-based, strain-based, behaviour-based WIF, and time-based, strain-based, behaviour-based FIW (Figure 1).

Work-family enrichment scale

Data screening showed that nine participants were multivariate outliers, so the CFA analyses were conducted on 161 participants. The normality of distribution was not violated. We specified four different models. The 6-factor model was based on the initial validation of WFES (Carlson et al., 2006). The 1-factor model represented general enrichment. All 18 items loaded on the one factor. The 2-factor model represented two directions of enrichment, WFE and FWE. Items 1-9 loaded on the WFE factor while items 10-18 loaded on the FWE factor. Finally, we specified a 4-factor model which consists of the following factors: development (items 1-3 and 10–12), affect (items 4–6 and 13-15), capital (item 7–9), and efficiency (items 16–18).

One-factor, two-factor, and four-factor models had poor fit of the data. The 6-factor model of the WFES had a good fit of the data ($\chi 2/df$ = 1.51, RMSEA = .06, SRMR = .02, CFI = .99). This model consists of the following 6 factors: development-based, affect-based, and capital-based WFE and development-based, affect-based, and efficiency-based FWE (Figure 2).

Reliability

Both the WFCS and WFES showed a high internal consistency of the subscales. The reliabilities of the subscales from the WFCS were .90, .92, and .79

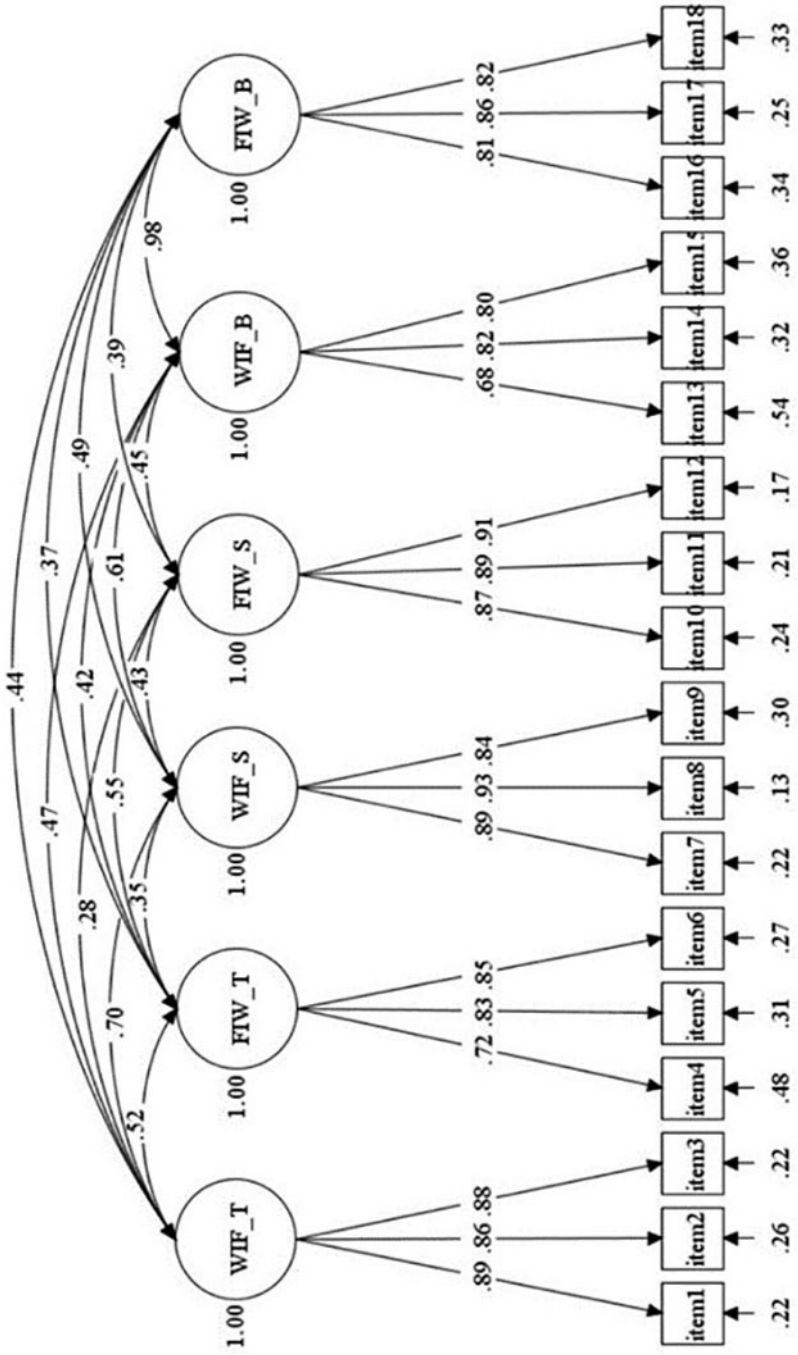

Figure 1. *CFA analysis for the 6-factor model of the WFCS*

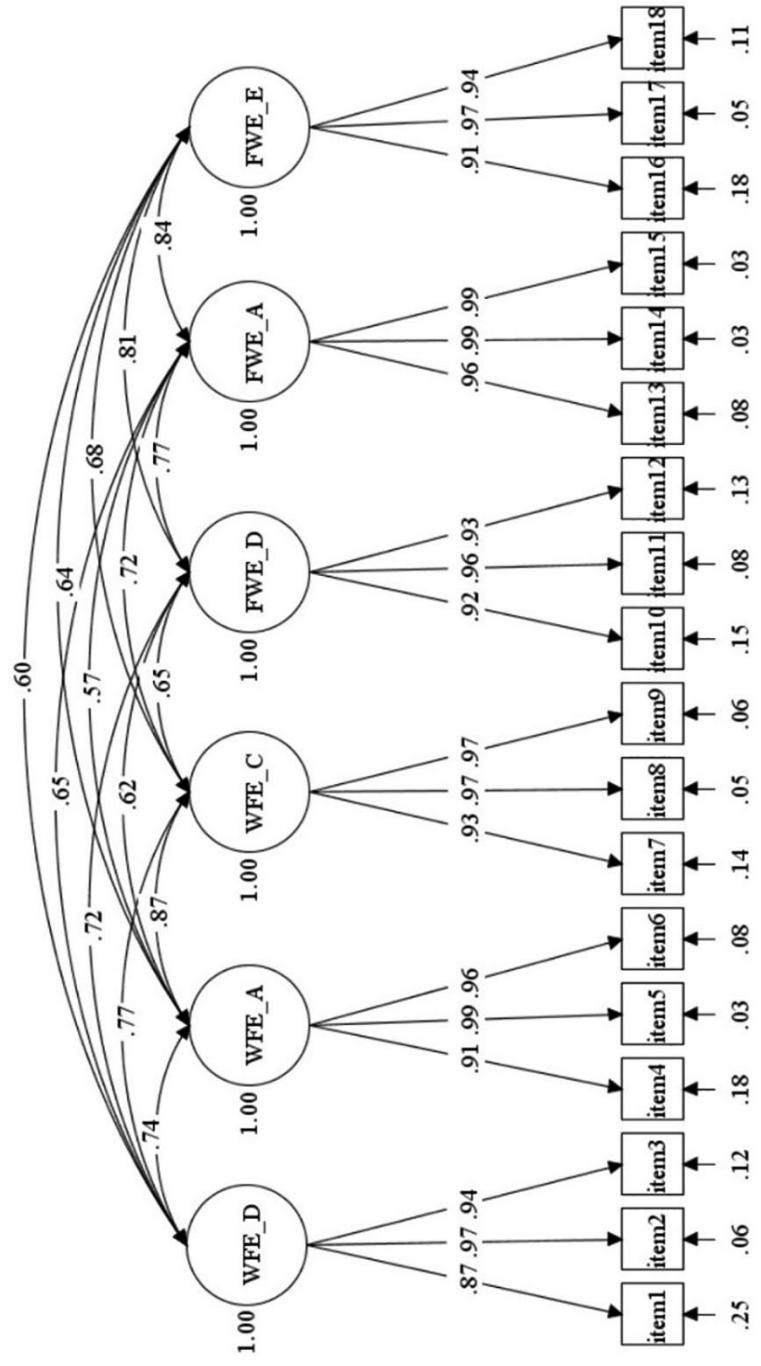

Figure 2. *CFA analysis for the 6-factor model of the WFES*

for the time-based, strain-based, and behaviour-based WIF, respectively; and .80, .90, and .85 for the time-based, strain-based, and behaviour-based FIW, respectively. The reliabilities of the subscales from the WFES were .94, .97, and .97 for the development-based, affect-based, and capital-based WFE, respectively; and .95, .98, and .96 for the development-based, affect-based, and efficiency-based FWE, respectively.

Divergent validity

To test the divergent validity, we correlated all the subscales of the WFCS and WFES (Table 3). The behaviour-based WIF had low negative correlations with development, affect, and capital-based WFE, but also with the development-based FWE. The behaviour-based FIW subscales negatively correlated with all three WFE subscales. The time-based WIF positively correlated with affect and efficiency-based FWE. The strain-based FIW had a negative correlation with the affect-based FWE, while the strain-based WIF had a negative correlation with the affect-based WFE.

Discriminant validity

Discriminant validity of the WFCS and WFES's subscales was examined via known-group differences (Table 4). Fathers who worked overtime had higher time-based and strain-based WIF compared to those who did not. Fathers who worked in shifts had lower affect-based FWE compared to those who worked regular hours. Affect-based FWE also differentiated between fathers who had a supervisor position, and those who do not, with latter expressing lower affect-based FWE. Finally, fathers with two or more children differed from those who had only one child only in strain-based WIF. Those with more children had higher strain-based WIF.

Discussion

This research aimed to validate multidimensional measures of the Work-Family Conflict Scale and Work-Family Enrichment Scale in Croatia. As expected, both scales show good reliability and factor structure as in the initial validation (Carlson et al., 2000, 2006).

The Croatian version of the multidimensional WFCS, like those in other countries (e.g., Carlson et al., 2000; Vieira et al., 2014), consisted of 6 factors: time-based, strain-based, and behaviour-based WIF and time-based, strain-based, and behaviour-based FIW. It shows the importance of the difference be-

Table 3. *Intercorrelation between the WFCS and WFES's subscales (N = 170)*

	WIF-T	FIW-T	WIF-S	FIW-S	WIF-B	FIW-B	WFE-D	WFE-A	WFE-C	FWE-D	FWE-A	FWE-E
WIF-T	–	.50**	.60**	.21**	.37**	.41**	.03	-.11	.02	.12	.16*	.18*
FIW-T		–	.36**	.51**	.33**	.33**	.04	-.01	-.02	.05	.06	.11
WIF-S			–	.40**	.46**	.40**	-.06	-.18*	-.07	-.02	.06	.04
FIW-S				–	.38**	.32**	-.07	.00	-.04	-.12	-.15*	-.11
WIF-B					–	.78**	-.22**	-.20**	-.16*	-.21**	-.08	-.12
FIW-B						–	-.25**	-.22**	-.17*	-.13	-.10	-.05
WFE-D							–	.72**	.71**	.66**	.62**	.58**
WFE-A								–	.84**	.61**	.55**	.61**
WFE-C									–	.62**	.68**	.62**
FWE-D										–	.73**	.78**
FWE-A											–	.76**
FWE-E												–

Note. WIF-T – time-based work-to-family conflict, FIW-T – time-based family-to-work conflict, WIF-S – strain-based work-to-family conflict, FIW-S – strain-based family-to-work conflict, WIF-B – behaviour-based work-to-family conflict, FIW-B – behaviour-based family-to-work conflict, WFE-D – development-based work-to-family enrichment, WFE-A – affect-based work-to-family enrichment, WFE-C – capital-based work-to-family enrichment, FWE-D – development-based family-to-work enrichment, FWE-A – affect-based family-to-work enrichment, FWE-E – efficiency-based family-to-work enrichment.

*$p < .05$; **$p < .01$

Table 4. *Descriptive statistics of individual items of the WFCS and WFES*

	Number of children		Supervisor position		Shift work		Overtime work	
	One child (n = 104)	Two or more children (n = 66)	Yes (n = 50)	No (n = 120)	Yes (n = 45)	No (n = 125)	Yes (n = 104)	No (n = 66)
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Work-Family Conflict Scale								
WIF-T	2.80 (1.29)	2.95 (1.14)	2.67 (1.24)	2.94 (1.23)	3.11 (1.31)	2.77 (1.20)	3.15 (1.24)	2.40 (1.07)
	$t(168) = 0.78$		$t(168) = 1.30$		$t(168) = 1.62$		$t(168) = 4.03^{**}$	
FIW-T	2.04 (0.95)	2.03 (0.84)	1.97 (0.91)	2.06 (0.91)	2.04 (0.88)	2.03 (0.92)	2.12 (0.92)	1.90 (0.88)
	$t(168) = 0.11$		$t(168) = 0.57$		$t(168) = -0.08$		$t(168) = -1.57$	
WIF-S	2.27 (1.07)	2.62 (1.10)	2.29 (1.16)	2.43 (1.06)	2.20 (1.21)	2.46 (1.04)	2.55 (1.14)	2.13 (0.96)
	$t(168) = -2.24^{*}$		$t(168) = 0.73$		$t(168) = 1.35$		$t(168) = -2.53^{*}$	
FIW-S	1.63 (0.82)	1.61 (0.81)	1.65 (0.92)	1.61 (0.77)	1.59 (0.80)	1.64 (0.82)	1.60 (0.80)	1.66 (0.85)
	$t(168) = 0.22$		$t(168) = -0.24$		$t(168) = 0.37$		$t(168) = 0.42$	
WIF-B	2.32 (1.11)	2.47 (0.89)	2.33 (1.12)	2.40 (0.99)	2.25 (1.06)	2.43 (1.02)	2.40 (1.04)	2.35 (1.01)
	$t(168) = -0.90$		$t(168) = 0.44$		$t(168) = 0.98$		$t(168) = -0.32$	
FIW-B	2.31 (1.07)	2.48 (0.97)	2.27 (1.06)	2.43 (1.02)	2.34 (1.12)	2.39 (1.00)	2.48 (1.04)	2.23 (1.01)
	$t(168) = -1.06$		$t(168) = 0.93$		$t(168) = 0.30$		$t(168) = -1.55$	
Work-Family Enrichment Scale								
WFE-D	3.23 (1.20)	3.24 (1.04)	3.40 (1.12)	3.16 (1.14)	2.99 (1.32)	3.32 (1.06)	3.31 (1.05)	3.11 (1.26)
	$t(168) = -0.06$		$t(168) = -1.25$		$t(168) = 1.65$		$t(168) = -1.10$	
WFE-A	3.13 (1.19)	3.04 (1.14)	3.20 (1.13)	3.05 (1.18)	3.00 (1.18)	3.13 (1.18)	3.05 (1.10)	3.16 (1.29)
	$t(168) = 0.46$		$t(168) = -0.78$		$t(168) = 0.62$		$t(168) = 0.57$	
WFE-C	3.36 (1.25)	3.31 (1.11)	3.51 (1.06)	3.27 (1.14)	3.12 (1.28)	3.42 (1.16)	3.35 (1.16)	3.32 (1.26)
	$t(168) = 0.23$		$t(168) = -1.18$		$t(168) = 1.45$		$t(168) = -0.18$	
FEW-D	3.30 (1.22)	3.41 (0.99)	3.59 (1.08)	3.24 (1.14)	3.17 (1.31)	3.41 (1.06)	3.44 (1.07)	3.20 (1.22)
	$t(168) = -0.63$		$t(168) = -1.81$		$t(168) = 1.21$		$t(168) = -1.32$	
FEW-A	3.75 (1.20)	3.80 (1.12)	4.05 (1.09)	3.65 (1.18)	3.44 (1.34)	3.89 (1.07)	3.85 (1.08)	3.65 (1.29)
	$t(168) = -0.26$		$t(168) = -2.03^{*}$		$t(168) = 2.25^{*}$		$t(168) = -1.09$	
FEW-E	3.43 (1.13)	3.51 (1.00)	3.69 (1.00)	3.36 (1.10)	3.24 (1.31)	3.54 (0.98)	3.54 (1.06)	3.33 (1.11)
	$t(168) = -0.42$		$t(168) = -1.82$		$t(168) = 1.57$		$t(168) = -1.23$	

Note: WIF-T – time-based work-to-family conflict, FIW-T – time-based family-to-work conflict, WIF-S – strain-based work-to-family conflict, FIW-S – strain-based family-to-work conflict, WIF-B – behaviour-based work-to-family conflict, FTW-B – behaviour based family-to-work conflict, WFE-D – development-based work-to-family enrichment, WFE-A – affect-based work-to-family enrichment, WFE-C – capital-based work-to-family enrichment, FWE-D – development-based family-to-work enrichment, FWE-A – affect-based family-to-work enrichment, FWE-E – efficiency-based family to work enrichment; $^{*}p < ,05$; $^{**}p < ,01$

tween two directions of influence between work and family life (Gutek, Searle, & Klepa, 1991). Also, it supports the idea of three different forms of conflict (Greenhaus, Parasuraman, Granrose, Rabinowitz, & Beutell, 1989). Although we confirmed the 6-factor structure, there is a very high correlation between the two behaviour-based subscales. A similar pattern of results was found in other validation studies, such as those in Slovenia (Tement et al., 2010), Portugal (Vieira et al., 2014), and Argentina (Pujol-Cols, 2019). This calls into question whether people can really differentiate between two directions of influence for this form of conflict. Employees may not always be sure which of the behaviours originated from their work, and which from their private family life, especially if those behaviours reflect in their personality. People can see their behaviour as something individual that they developed through personal development. When considering time and strain conflict, it can be easier for people to determine the role in which the problem arises. Some authors, such as Tement et al. (2010), claim that low correlation, rather than a medium or high one, would be a bigger problem since these scales should measure interrelated aspects of the work-family interface.

The WFES (Carlson et al., 2006) in Croatia has a 6-factor structure: development-based, affect-based, and capital-based WFE and development-based, affect-based, and efficiency-based FWE. The same structure was confirmed in several countries (e.g., Tement et al., 2010; Vieira et al., 2014). Therefore, it seems that employees in different countries and different life situations, experience positive effects of work on family life – and vice versa – in a similar manner. Vieira et al. (2014) suggest that even in different cultural backgrounds, the fundamental mechanisms of work-family dynamics on the individual level can be the same.

The obtained correlations between the WFCS and WFES measures were low, suggesting that these two measures share only a minor proportion of variance. Early conceptualizations defined work-family balance as low conflict and high enrichment (Frone, 2003). However, it seems that they tap into a different aspect of the work-family interface. Having a high level of enrichment does not imply an absence of conflict between the two life roles. These results highlight the importance of measuring both aspects if we want to truly capture the work-family interface. Nevertheless, due to the length of measures, it can sometimes be hard to incorporate them in research. Both scales have abbreviated versions (Kacmar et al., 2014; Matthews, Kath, & Barnes-Farrell, 2010) that are better suited for more extensive studies.

In this research, the behaviour-based dimensions of both the WIF and FIW were negatively correlated with all the dimensions of work-to-family enrichment. Additionally, the behaviour-based WIF was negatively correlated with the

development-based FWE, therefore confirming the importance of distinguishing between the behaviour-based WIF and FIW. Greenhaus and Powell (2006) assumed that instrumental and affective enrichment could have a different relationship with conflict. In line with that proposition, some time and strain forms of conflict only correlated with the affect-based dimensions of enrichment. Fathers with lower strain-based FIW experienced higher affect-based FWE. The same relationship was found for the strain-based WIF with affect-based WFE. It seems that when fathers feel less strain in each of the domains, the positive mood transferred from that role to the other. Moreover, fathers with higher affect and efficiency-based FWE had higher time-based WIF. It is possible that though they have a supportive and positive family environment and developed efficiency strategies, due to extensive obligations with infants, they still feel that because of the workload they do not have enough time for their family.

The results of discriminant validity showed that fathers who work overtime experience higher time-based and strain-based WIF. Cooklin et al. (2015) found that the number of work hours per week and shift work positively correlated with higher work-family conflict. However, in this research, there were no differences in any of the WFCS subscales between fathers who worked in shifts and those who did not. Also, it is interesting to note that behaviour-based WIF and FIW did not show discriminative value for either of the investigated variables. Among the WFES subscales, only the affect-based FWE showed a significant difference for the work characteristics. Fathers who were in a supervisory position and those who did not work in shifts experienced higher work-related improvements because of the positive emotional state or attitude in family life. Although Lapierre et al. (2018) posited that work characteristics are more important for the WFE, and family characteristics for the FWE, these results may be due to the specific sample of fathers with infants. Happiness and positive mood experienced at home could transfer to work more for supervisors, because of the higher autonomy they have, compared to workers in lower positions. Also, this effect may be more elevated for fathers who did not work in shifts, since shift work is shown to impair health and well-being (Costa, 1996). Finally, the number of children was only relevant for strain-based WFC. Fathers with two or more children, more than those with one child, feel emotionally drained and anxious due to pressures at work which prevents them from participating and enjoying family activities.

There are some limitations to this study that should be acknowledged. First, some issues arise from online recruitment. We could not control who really participated in the study. However, the participants did not get financial or any other rewards which may have motivated them to forge answers. Furthermore, due to online recruitment the sample of the fathers may be biased.

The participants were mostly highly educated fathers who use social networks, which calls for caution when trying to generalize findings. People with higher education, compared to, for example, high-school educated, usually have a higher salary, more autonomy at work, and better working conditions. All these factors are related to work-family conflict (Byron, 2005) and work-family enrichment (Lapierre et al., 2018). Also, there is a possibility that participants gave socially desirable responses. However, participation in the research was anonymous, which may decrease the need for misrepresentation. Furthermore, we only tested the divergent and discriminant validity of the scales. Future research should focus on convergent validity, but also investigate if the dimensions of both the WFCS and WFES had incremental value in the prediction of work and family-life consequences. This is especially important for the behavioural dimensions of the WFCS.

Nevertheless, this validation of both scales shows that they could be used in Croatia in this form. We invite researchers to confirm the invariance of the instruments across different groups (e.g., women, men without children). Also, the multidimensional approach to work-family conflict and enrichment may provide a better understanding of their connections to work-related and family-related outcomes. Future research should also take into consideration a person-centred methodological approach (e.g., latent profile analysis), which can provide more insight into different categories of individuals regarding work-family conflict and enrichment. Finally, companies and organizations that aim to develop family-friendly policies can use both WFCS and WFES for detecting potential sources of conflict, but also positive aspects of the job.

Conclusion

Both the WFCS and WFES show the best fit of the data for the 6-factor solutions, as in the initial validations of scales. Furthermore, based on the correlation analysis, we can argue that work-family conflict and enrichment present different aspects of the work-family interface. Taken together, these findings provided support to the reliability and validity of the WFCS and WFES in the Croatian context. We believe that these measures may encourage future research of work-family conflict and enrichment and provide a better understanding of the work-family interface in Croatia.

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Appendix

Skala sukoba radne i obiteljske uloge

Molimo, odgovorite na tvrdnje koristeći sljedeću ljestvicu:

1	2	3	4	5
Uopće se ne slažem	Ne slažem se	Niti se slažem, niti se ne slažem	Slažem se	U potpunosti se slažem

1. Moj posao odvaja me od obiteljskih aktivnosti više nego što bih želio.	1	2	3	4	5
2. Vrijeme koje moram posvetiti svom poslu onemogućava mi da podjednako sudjelujem u kućanskim obvezama i aktivnostima.	1	2	3	4	5
3. Moram propustiti obiteljske aktivnosti zbog količine vremena koje moram provesti obavljajući poslovne obveze.	1	2	3	4	5
4. Vrijeme koje provedem na obiteljske obveze često interferira s mojim odgovornostima na poslu.	1	2	3	4	5
5. Vrijeme koje provedem s obitelji često vodi tome da ne provedem vrijeme u aktivnostima na poslu koje bi mogle pomoći mojoj karijeri.	1	2	3	4	5
6. Moram propustiti aktivnosti na poslu zbog količine vremena koje moram provesti na obiteljske obveze.	1	2	3	4	5
7. Kada dođem kući s posla, često sam previše iscrpljen da sudjelujem u obiteljskim aktivnostima/obvezama.	1	2	3	4	5
8. Često sam toliko emocionalno „iscijeđen“ kada dođem kući s posla da me to sprječava da pridonosim svojoj obitelji.	1	2	3	4	5
9. Zbog svih pritisaka na poslu, ponekad kad dođem kući, previše sam pod stresom da radim stvari u kojima uživam.	1	2	3	4	5
10. Zbog stresa kod kuće, često sam na poslu zaokupljen obiteljskim stvarima.	1	2	3	4	5
11. Teško se koncentriram na posao jer sam često pod stresom zbog obiteljskih obveza.	1	2	3	4	5
12. Napetost i tjeskoba iz mog obiteljskog života često mi umanjuju kapacitet da radim svoj posao.	1	2	3	4	5
13. Načini rješavanja problema koje koristim u mom poslu nisu učinkoviti za rješavanje problema kod kuće.	1	2	3	4	5
14. Ponašanje koje je učinkovito i neophodno za mene na poslu bilo bi kontraproduktivno kod kuće.	1	2	3	4	5
15. Ponašanja radi kojih sam učinkovit na poslu ne pomažu mi da budem bolji roditelj i supružnik.	1	2	3	4	5
16. Ponašanja koja djeluju kod kuće nisu učinkovita na poslu.	1	2	3	4	5
17. Ponašanje koje je učinkovito i neophodno za mene kod kuće bilo bi kontraproduktivno na poslu.	1	2	3	4	5
18. Načini rješavanja problema koji djeluju kod kuće ne čine se tako korisnim na poslu.	1	2	3	4	5

Skala obogaćenja radne i obiteljske uloge

Kako biste odgovorili na tvrdnje, umetnite svaku tvrdnju u rečenicu gdje je naznačeno. Tada označite Vaše slaganje s cijelom izjavom koristeći ljestvicu koja se nalazi ispod. Uzmite u obzir da ako se jako slažete (4 ili 5) s nekom od tvrdnji to se mora odnositi na cijelu tvrdnju.

Primjerice, uzmite u obzir prvu tvrdnju: Uključenost u moj posao pomaže mi razumjeti različita gledišta i to mi pomaže da budem bolji član obitelji. Kako biste se snažno složili s ovom izjavom, morate se slagati da (1) Vam uključenost u posao pomaže razumjeti različita gledišta **kao i** (2) da se ta različita gledišta prenose kući tako da ste bolji član obitelji.

Molimo, odgovorite na tvrdnje koristeći sljedeću ljestvicu:

1	2	3	4	5
Uopće se ne slažem	Ne slažem se	Niti se slažem, niti se ne slažem	Slažem se	U potpunosti se slažem

Uključenost u moj posao					
1. Pomaže mi razumjeti različita gledišta i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
2. Pomaže mi steći znanje i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
3. Pomaže mi steći vještine i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
4. Čini me raspoloženijim i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
5. Čini me sretnim i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
6. Čini me veselim i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
7. Pomaže mi da se osjećam ispunjeno kao osoba i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
8. Omogućava mi osjećaj ostvarenja i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
9. Omogućava mi da se osjećam uspješno i to mi pomaže da budem bolji član obitelji.	1	2	3	4	5
Uključenost u moju obitelj					
10. Pomaže mi da stječem znanje što mi pomaže da budem bolji radnik.	1	2	3	4	5
11. Pomaže mi steći vještine što mi pomaže da budem bolji radnik.	1	2	3	4	5
12. Pomaže mi da proširim svoje znanje o novim stvarima što mi pomaže da budem bolji radnik.	1	2	3	4	5
13. Čini me raspoloženijim što mi pomaže da budem bolji radnik.	1	2	3	4	5
14. Čini me sretnim što mi pomaže da budem bolji radnik.	1	2	3	4	5
15. Čini me veselim što mi pomaže da budem bolji radnik.	1	2	3	4	5
16. Zahtijeva od mene da izbjegavam gubiti vrijeme na poslu što mi pomaže da budem bolji radnik.	1	2	3	4	5
17. Potiče me da koristim svoje vrijeme na poslu na usredotočen način što mi pomaže da budem bolji radnik.	1	2	3	4	5
18. Dovodi do toga da budem više fokusiran na poslu što mi pomaže da budem bolji radnik.	1	2	3	4	5

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Psychosocial determinants of pain during childbirth

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Abstract

Introduction. Childbirth is considered to be one of the most intense painful experiences in a woman's life. The experience of childbirth pain is the result of a complex interaction of multiple physiological and psychosocial factors that further influence a woman's individual interpretation of nociceptive stimuli during childbirth. The perception of pain is the result of a process in the brain whereby the nociceptive stimulus is treated with a number of factors and individual pain perception is specific to each individual with different response to the nociceptive stimulus as a manifestation of different components of pain. Nociceptive pain is "physical" as opposed to the affective component of pain that represents a psycho-emotional experience of pain. **Aim.** To examine the correlation between different determinants of pain experience in childbirth (age, number of births, and experience of affective and

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sensory quality of pain, anxiety). Method(s). The study was conducted at the Sestre Milosrdnice University Hospital Center in Zagreb, on a sample of 124 parturient women. One-dimensional scale, VAS scale, was used to assess pain intensity, and the Melzack-McGill Pain Questionnaire provided information on the qualitative aspect of pain. The STAI-X scale was used to assess anxiety as a personality trait, which assessed relatively stable individual differences in anxiety preference. **Results.** Overall anxiety was not significantly associated with experiencing pain intensity, nor with the sensory component of pain, but was significantly positively associated with the affective component of pain. Furthermore, maternity age was statistically significantly negatively related to the sensory component of pain but not affective. **Conclusion.** The results indicate the importance of the maternity psychic condition in experiencing pain in childbirth.

Keywords: pain, childbirth, anxiety

Introduction

Pain is a subjective and highly personal experience. Each individual will experience the same painful stimuli in a different way, which is influenced by a whole range of factors. Pain is sculpted by a mosaic of factors that is completely unique to each individual at a given point in time (Fillingim, 2017).

Pain experience can be described using two separate dimensions: one relates mainly to sensory-discriminatory aspects and the other relates to affective-motivational features of pain perception. There is compelling evidence that these two dimensions, sensory and affective-motivational, can be separated and that the affective-motivational component is strongly modulated by context and cognitive assessment of pain (Horn et al., 2012). This affective-motivational dimension can be determined through two stages of the process. The first phase covers the immediate affective response to a noxious stimulus (commonly referred to as "pain discomfort"), while the second phase is associated with more complex emotional reactions such as frustration, depression, and anger (Price et al., 1992). The affective dimension of pain involves the discomfort, fear, and arousal associated with pain, with a strong urge to escape or avoid that discomfort (Melzack & Casey, 1968). The perception of pain involves much more than mere sensation. The affective and evaluative components of pain are often as important as the production and transmission of pain signals in nervous system (Hansen & Streltze, 2005).

The experience of childbirth pain is a complex, subjective, multidimensional response to sensory stimulation. For most women, birth is considered the most intense painful experience in their life. It has different significance for different individuals. Unlike acute and chronic pain, birth pain is not related to pathology but is a consequence of the physiological process (Lally et al., 2014).

Labour pain perception is also multifactorial determined, and is a consequence of a number of psychological, physiological, socio-cultural, environmental, and personality-related factors that can significantly affect pain experience, including previous pain experience, postpartum assistance, sensitivity and cognition, anxiety, fear, socioeconomic status, education, birth duration, child size, and a number of other factors (Lowe, 2002). Pain is a subjective experience with pronounced individual variability, whereby each woman will have a different clinical response respond to the same painful stimulus (Brownridge, 1995; Beigi et al., 2010). Severe pain during childbirth may be associated with an increased risk of childbirth posttraumatic stress syndrome/disorder (PTSD) (Garthus-Nigel et al., 2014).

The birth of a child is an event in a woman's life that is imbued with very strong emotions. Childbirth itself is a relatively short event but can have long lasting consequences in a woman's life. Negative birth experiences can ultimately have an impact on the onset of postpartum psychiatric symptoms, sexual dysfunction, and expectations of future births, as well as a negative impact on the mother-child relationship (Goodman et al., 2004). Fear of labour pain can greatly cause emotional disbalance and avoidance of activities that can further lead to pain exacerbation to a much greater extent.

Anxiety and depression, when present during pregnancy and childbirth, have many adverse events for maternal mental health as well as for the birth outcome (Dunkel Schetter & Tanner, 2012). Anxiety can be defined as a physiological and emotional response characterized by the feeling of tension, oppression, and fear that occurs in situations where a person experiences insecurity, real or potential danger (Grillon, 2008). Furthermore, anxiety can be described as an emotional state of misgiving, insecurity, and fear that is often accompanied by autonomic nervous system activation and physical symptoms.

The sensory experience of pain cannot be separated from the emotional. Studies have shown that the emotional state of anxiety lowers pain tolerance and can also enhance pain. Anxiety also could lower the threshold for pain tolerance, while significantly increasing the experience of pain itself (Carter et al., 2002). In contrast, experimental research shows that manipulations of pleasant emotions generally lead to pain reduction (Ivanec, 2004). Numerous studies have addressed the co-morbidity of pain and anxiety disorders, as well as the relatedness of these, while very few studies have been conducted on healthy subjects and focus on anxiety as a trait rather than a disorder (McWilliams et al., 2003; Gureje, 2008). The aim of the research was to examine the correlation between different determinants of pain experience during childbirth (age, marital status, number of births, experience of affective and sensory quality of pain) and anxiety in women.

Method

The cross-sectional study was conducted at the Sestre milosrdnice University Hospital Center in Zagreb, on a sample of 124 parturient women. Data were collected within the first two hours following delivery. One-dimensional scale, VAS was used to assess pain intensity, and the Melzack-McGill Pain Questionnaire was used to measure qualitative aspects of pain. This multidimensional questionnaire provides information on the sensory component, affective component of the pain, and evaluates the component of total pain. STAI-X questionnaire was used to assess anxiety as a trait, thus estimating relatively stable individual personality differences in anxiety.

Pearson correlations were computed to investigate associations among variables and t-test for independent samples for difference between groups according to epidural analgesia (birth with and without epidural analgesia). Statistical software SPSS ver. 21.0 was used for the analysis.

Results

Table 1 presents the descriptive statistics for investigated variables.

The correlation of age and number of previous births with the pain experience is presented in Table 2. Sociodemographic characteristics do not appear to be significantly related to either measured aspect of pain or degree of anxiety. Also, no significant difference in pain was found according to the number of previous births. Women's age was statistically significantly negatively associated with the sensory component of pain, but not the affective component of pain.

To investigate whether there is a difference in pain intensity and anxiety between women who request epidural analgesia and those who did not, t-test for independent samples was calculated.

Table 1. *Descriptive statistics for examined variables*

	M	*SD*	Median	Observed minimum	Observed maximum
Age	30.26	3.78	30	20	39
VAS	8.00	1.40	8	3	10
SF-MPQ overall	19.98	9.82	21.00	0	37.00
SF-MPQ sensory	15.31	7.18	17.00	0	28.00
SF-MPQ affective	4.67	3.26	5.00	0	12.00
STAI	38.35	7.79	37.00	23.00	64.00

Table 2. *Correlations between pain, anxiety and some socio-demographic characteristics*

	VAS	SF-MPQ overall	SF-MPQ sensory	SF-MPQ affective	Anxiety
VAS	–	.008	-.017	.025	.039
Anxiety	.039	.178*	.112	.238**	–
Age	.011	-.190*	-.207*	-.136	.035
N of births	-.052	-.059	-.061	-.091	-.043

Table 3. *Descriptive statistics for VAS and STAI scores and significance of difference according to epidural analgesia*

	Epidural analgesia		
	Yes	No	*p*
VAS			
M	8.36	7.71	.009
SD	1.483	1.273	
STAI			
M	37.18	39.29	.135
SD	8.190	7.389	

Significant difference in the intensity of pain between the groups according to epidural analgesia was found in the direction of higher pain intensity in the group that asked for epidural analgesia ($t= -2.639$; $df=122$; $p < .01$).

No significant difference was found in anxiety level between groups, i.e., between those who ask and do not ask for epidural analgesia ($p > .05$).

Discussion

Contrary to expectations, overall anxiety did not appear to be related to the intensity and severity of pain experienced. Also, overall anxiety did not appear to be significantly associated with the sensory component of pain but was significantly positively correlated with the affective component of pain. In women with more pronounced anxiety as a personality trait, the affective component of pain was more pronounced in the experience of pain (Table 2).

There are factors that can affect the presence or intensity of the affective component of labour pain (for example, possible traumatic or bad experiences in previous births, concern for the child if there were problems with the child

during the birth and the child eventually ended up in the intensive care unit, difficult social situation, single mothers' issues), which can also remodulate the path of labour pain and affect the intensity of the nociceptive stimulus.

Results indicate the importance of the woman's psychological/emotional state in experiencing pain during childbirth. Previous research has shown that women's experience of coping with pain during childbirth is complex and multifaceted, and can depend upon emotional and social support the woman perceives and feels (Van der Gucht & Lewis 2015).

Furthermore, our results indicate that women's age was statistically significantly negatively associated with the sensory component of pain, but not the affective. Older women experienced lower sensory pain, which can be attributed to their previous life experience of pain in various situations. This may be explained by the good experiences of women in previous births who did not suffer from severe pain or were satisfactorily handled. Also, older women may be more likely to have planned pregnancies or pregnancies as a result of multiple assisted fertilization attempts with consecutive better preparation to deal with pain and pain control options. Non-existing correlation between anxiety and the experienced severity of pain in this study was found. A key possible explanation could be addressed to situations of severe pain that are already close to their maximum intensity (10), in some women it was 10, so more severe anxiety may not lead to greater pain when it is already near the maximum.

In addition, contrary to expectations, women with more severe anxiety did not choose epidural analgesia more often. Given the degree of anxiety in the maternity ward, there is a fear of potential complications associated with epidural analgesia, which may be a crucial factor for not asking for epidural analgesia by these women. Regardless of the availability of information, pregnancy courses in preparation for childbirth, and the information about rare complications, women are still susceptible to environmental/social influences what may be crucial in deciding on the choice of epidural analgesia.

The STAI questionnaire appears to be a good instrument to evaluate anxiety, but its interpretation in the latent or active phases of labour is highly dependent on pain. It is necessary to point out that latent anxiety is most likely not quite comparable to general anxiety (Huizink et al., 2004). Therefore, the evaluation of anxiety cannot be isolated from the emotional component and sense of control, which are significant aspects of labour. Worthy of mention is that some qualitative studies revealed that many of the women perceived childbirth pain as challenging, however, they described the inherent paradox for the need for pain to birth their child. This allowed them to embrace the pain, subsequently enhancing their coping ability (Van der Gucht & Lewis 2015). Childbirth is a specific situation of experiencing pain and anxiety and these

results cannot be generalized to other situations when pain is the result of a pathological processes, or vice versa. Therefore, this study shows that it is not valid to generalise results from other studies on patients with pain to conclusions about labour pain correlates. Perinatal anxiety should be estimated before delivery as the distinction between pain and anxiety becomes difficult with the onset of labour (Floris & Irion, 2015).

Some study limitations need to be addressed: It is difficult to standardise pain during the first stage of labour. The degree, duration and intensity of pain fluctuate, similar to the individual perception of labour pain, which makes interpretation difficult. Possible moderating factors, previously mentioned, were not examined and controlled.

Conclusion

The results indicate the importance of the woman's psychological state in experiencing pain during childbirth. In parturient women with more pronounced anxiety as a personality trait, the affective component of pain appears to be more pronounced in the experience of pain. This points to the importance of individualised, continuous support for women coping with pain during childbirth.

In our study, the intensity (severity) of pain was not significantly associated with the degree of anxiety. The results obtained in studies examining pathological pain cannot be generalized to situations of physiological pain during childbirth.

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Somatic symptoms in children: Agreement between parents and children's assessment

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Abstract

It is well established that parental reports on the child's symptoms are essential for a full psychological assessment of children's mental health problems. Disagreements between the informants' assessments of the child's somatic symptoms have a decisive impact on diagnosis and treatment. Given the importance of obtaining and analyzing reports from multiple informants and the fact that the number of experienced somatic symptoms has increased significantly in the entire child population, the present research aims to investigate the agreement between children's and parents' assessments of the frequency and severity of somatic symptoms. The study was conducted in a primary school in Croatia and included a sample of 122 participants: 61 children (44.3% girls and 55.7% boys) aged between 11 and 14 years (average age 12.5 years; SD = 1.1) and their parents (N = 61; 81.9% mothers, 16.4% fathers and 0.02% of the others). The participants completed the Psychosomatic Symptoms Scale (PSS) – versions for children and for parents. PSS is a questionnaire of 35 items that evaluates the frequency and severity of somatic

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symptoms. The results of this study indicate that there is no significant correlation between the self-assessment of the children and the assessment of the parents regarding the somatic symptoms of the children. There was also no significant correlation between the self-assessment of the children and parents regarding their own symptoms. In addition, it was found that the parents reported that their children suffered less frequently from somatic symptoms and that these symptoms affected the child's everyday functioning less than the children claimed for themselves. These findings underline the importance of collecting information on children's mental health from multiple informants, both in research and clinical settings. The results of this study could raise clinicians' awareness of the disagreements between child and parents and of the fact that each respondent is a different but valuable source of information. Therefore, children should be questioned about their inner processes and parents should report on the child's behaviour in order to gain a complete insight into the psychological and social world of the child.

Keywords: somatic symptoms, self-assessment of the child, assessment of the parents, Psychosomatic Symptoms Scale (PSS)

Introduction

Somatic symptoms are very common in children and adolescents, but they often find it difficult to express them verbally. For this reason, their parents may not be aware of the child's problem, and these symptoms persist. Somatic symptoms are described as physical suffering caused by the inability of patients to express emotional states (Isaac, 1996). They are usually perceived as physical discomfort, a threat to interpersonal relationships and fear of the future, as they occur in the absence of a general state of health to which they can be attributed. Some earlier results have estimated that the prevalence of patients visiting a doctor for somatic symptoms was around 50% (Garber, 1998). Recently it has been confirmed that about 25-50% of children suffer from some form of physical symptoms that may be related to psychological factors, so that children are usually referred to health services for treatment of these problems (Rask, Bonvanie, & Garralda, 2018). Somatic symptoms are usually ambiguous and diffuse and are a stressful experience, as they can cause negative feelings of guilt or shame. More specifically, persistent episodes of somatic symptoms can lead to functional impairment, which can result in school failure and increased psychopathology. According to some earlier findings, the results suggest that somatic symptoms such as headache or abdominal pain are relatively highly associated with some internalized disorders such as depression and anxiety (Santalahti, Aromaa, Sourander & Helenius 2005). Indeed, some authors have pointed out that the comorbidity of depression, anxiety and somatic symptoms tends to lead paediatricians to make an inaccurate diagnosis and subsequently to choose inappropriate treatment (Romero-Acosta, Canals, Hernandez-Mar-

tinez, Penelo, Zolog, & Domenench-Llabeira, 2013). Symptoms associated with internalized difficulties can be a tremendous burden for individuals and families. In addition, they are usually difficult to recognize and the majority of psychological interventions have focused on the treatment of such symptoms (Bonvanie, Kallesoe, Jansens, et al., 2017).

The issue of somatic symptoms in childhood and adolescence has recently become more common. Looking back to the 1970s, some somatic symptoms such as fatigue were not seen as a problem, whereas in 2001 more than 40% of children of the same age as in the 1970s reported fatigue on a weekly basis (Peterson, Bergstorm & Brulin, 2003). According to the results of the Croatian sample of 1236 children and adolescents, fatigue is the second most common somatic symptom. 39.65% of the participants reported that they suffered from fatigue several times a month, 25.59% a few times a week and even 13.81% almost every day (Vulić-Prtorić, 2016). It is well documented that the number of somatic symptoms has increased relatively strongly over the years (Santalahti et al., 2005). These authors suggested that an increased number of stressful life events, such as changes in the way a family functions or even the pattern of leisure activities (e.g. playing computer games, sitting in front of the computer) may have contributed to the frequent occurrence of somatic symptoms.

It should be noted that the individual's response to somatic symptoms depends on family and cultural norms, current interpersonal relationships, the perception of symptoms and the strategies used to cope with them (Kleinman and Osterweis, 1987). Some recent studies have sought to identify psychosocial factors that might explain how some somatic symptoms are passed from generation to generation (van Tilburg, Levy, Walker, von Korff, Fed, Garner, Fed, & Whitehead, 2015). These results suggested that this phenomenon could be clarified by social learning theory in terms of reinforcing and modelling the parents' disease behaviour. In other words, these authors emphasize that parents' special attention to the expression of somatic symptoms of the child or the restriction of the child's duties and activities may inadvertently reinforce the illness behaviour. Nevertheless, the modelling process can also play a crucial role in the intergenerational transmission of somatic symptoms (van Tilburg, Levy et al., 2015). These authors also pointed out that mental stress can be an important factor in the above-mentioned transmission. Studies have suggested that stress is related to an increased propensity to report somatic symptoms and that stress usually affects the whole family, so this factor may clarify the similarity of reported symptoms between mother and child (Bennett, Tennat, Piesse, Badcock, & Kellow, 1998; van Tilburg et al., 2015). Given the psychological study of children and their parents, there has been a growing interest in considering each informant as a unique source of information. This has led

to extensive research on the degree of agreement among these respondents in a particular area of interest (De Los Reyes & Kazdin, 2004; Pirinen, Kohlo, Simola, Ashorn, & Aronen, 2011). There is a general consensus that the study of information from multiple informants was a necessary assessment strategy, as it provides an accurate insight into the child's social, emotional, physical and cognitive functions (Herjanic, Herjanic, Brown, & Wheatt, 1975). However, these sources often show a relatively low level of agreement (Achenbach, McConaughy & Howell, 1987). In some cases, this may cast doubt on whether children are a reliable source of information when it comes to identifying the frequency and severity of their symptoms. However, many studies have indicated that children are competent sources of information about their internal processes (Andrasik, Powers & McGrath, 2005). More specifically, the authors suggested that a 7-year-old child is able to describe the duration and severity of a headache and that a child at the age of 11 is able to use cognitive methods in the treatment of headache. Furthermore, Santalahti et al (2005) suggest that in cases where the child reported a headache or abdominal pain on a daily basis, parents claimed that their child had never had these symptoms (14% for headache; 30% for abdominal pain). Some previous studies specifically address this problem by implying that children and parents disagree on abstract and ambiguous problems, and their results indicated that the agreement on children's somatic symptoms was low to poor (Pirinen et al., 2011). However, the degree of agreement depends mainly on the type of symptoms reported. To be more precise, Garber, Slyke and Walker (1998) claimed that the agreement between children and parents tended to be higher for behaviours that are easier to observe (e.g. bed-wetting, conflicts in relationships with significant others) compared to internalized symptoms such as depression, anxiety or somatic symptoms. A number of factors have been suggested to highlight disagreement between child and parents, including the child's gender and age, the nature of the parents' psychopathology, and the nature of the symptoms assessed (Garber et al., 1998). These authors mentioned that the disagreement is greater in adolescents than in children. However, no agreement was found regarding the influence of the child's gender on the concordance between child and parents (Herjanic, Herjanic, Brown and Walker, 1998).

In order to gain a better insight into the agreement between the assessment of somatic complaints of children and parents, the aim of the present study was to examine the correlation between the children's self-assessment and the parents' assessment of the children's somatic symptoms. Previous results indicated that children and parents perceive the children's symptoms differently, so we expected a relatively poor but significant correlation between the children's self-assessment and the parents' assessment of the children's somatic symptoms. Furthermore, due to the psychosocial mechanisms underlying the

intergenerational transmission of somatic symptoms, we expected a significant correlation between the assessment of the children and the self-assessment of the parents regarding the somatic symptoms.

Method

Participants

The current study includes data collected from 122 participants: 61 children (44.3% girls and 55.7% boys) between 11 and 14 years (average age 12.5 years; SD = 1.1) from primary school in Croatia and their parents (N = 61; 81.9% mothers, 16.4% fathers and 0.02% of the others).

Instrument

The Psychosomatic Symptoms Scale (PSS) (Vulić-Prtorić, 2016; 2019) is a scale consisting of 35 items that examine 35 somatic symptoms and sensations from 7 body organ systems: respiratory, cardiovascular, muscular, gastrointestinal, dermatology, pseudoneurology and pain/weakness. The use of the PSS provides information on the number and frequency of symptoms experienced in the last 3 months, the extent to which each symptom interferes with the person's daily activities, the accumulation of symptoms and the assessment of the general health status. The PSS is available in 3 possible versions: self-assessment questionnaire for children, adolescents and adults, assessment of the child/adolescent's symptoms by the parents (or carers) and finally assessment of the child/adolescent's symptoms by other persons (e.g., doctor, teacher, etc.). The items are the same in all three versions, only the introductory part has been reformulated into introspective or observable view. The participants are expected to assess each symptom by answering 2 questions: "How often have you had this problem?" (Frequency Scale) and "How much does it bother you?" (Severity Scale). To answer the first question, participants rate the symptoms on a 4-point Likert scale; 1 means "never", 2 means "a few times a month", 3 means "a few times a week" and 4 means "almost every day". The second question is answered on a 3-point Likert scale: 1 means "not at all", 2 means "a little" and 3 means "a lot". The sum of the scores on the frequency and severity scale gives the total score, with higher scores implying higher frequency and higher suffering from somatic symptoms. The reliability of the PSS scale was checked by the coefficients of internal consistency and the results show that the questionnaire has a relatively high reliability. The Cronbach alpha for the frequency scale is .89 and .91 for the severity scale (Vulić-Prtorić, 2019). In

Table 1. *Descriptive data and Cronbach alpha coefficients for the self-assessments of children and the (self-) assessments of parents on the PSS Psychosomatic Symptoms Scale (frequency and severity).*

	M	Min	Max	*SD*	*K-S* test	Cronbach alpha
CHILDREN'S SELF-ASSESSMENT (N=61)						
PSS frequency	49.30	35.00	70.00	7.96	.12	.80
PSS severity	44.18	35.00	58.00	6.21	.11	.79
PARENTS' ASSESSMENT OF CHILD'S SYMPTOMS (N=61)						
PSS frequency	43.23	36.00	140.00	13.70	.30*	.83
PSS severity	39.67	35.00	60.00	5.17	.20*	.81
PARENTS' SELF-ASSESSMENT (N=61)						
PSS frequency	46.00	35.00	78.00	8.39	.12	.87
PSS severity	43.00	36.00	72.00	7.79	.15	.89

$p<.05$

this study, the internal consistency coefficients were calculated for each scale in both samples, which are shown in Table 1.

Procedure

The PSS was carried out in group samples of children during a regular lesson and in samples of parents during PTA meetings. The participants were informed that participation was voluntary and anonymous. The children were asked to fill in the PSS form of the questionnaire used for self-assessment of the frequency and severity of their own somatic symptoms and the parents were asked to fill in two forms of the PSS questionnaire: PSS-Self-assessment of their own somatic symptoms and PSS-R, i.e. the assessment of their child's somatic symptoms. It is important to add that the parents were informed that in a case where they did not want their child to participate in the same examination, they were obliged to inform the child. The present research was approved by the Ethical Committee of the University of Zadar.

Results

Table 1 shows the descriptive results of all three somatic symptom assessments: Children's self-assessment, parents' self-assessment and parents' assessment of children's somatic symptoms, all on the subscales of frequency and severity. In general, the children's reports of the frequency and severity

of their somatic symptoms were higher than the parents' corresponding ratings. Statistically significant differences were found in the frequency scale ($t = 2.99$, $p < .05$) and the severity scale ($t = 4.36$; $p < .05$). According to the data presented in Table 1, which refers to the self-assessments of the children and the self-assessments of the parents, the test results of Kolmogorov-Smirnov on both subscales, the frequency and the severity subscale, do not differ significantly from the results of the normal distribution. It is therefore justified to use parametric statistics (Pearson correlation coefficient) for further analysis.

However, taking into account the assessment of the somatic symptoms of the children by the parents and according to the Kolmogorov-Smirnov test, the results on the subscales are significantly different from the results of the normal distribution (Table 1). In this case it is justified to use non-parametric statistics in further analysis. For this reason, the Spearman correlation coefficient was used.

Correlation coefficients were calculated to analyse the association between the ratings of different informants. The results in Table 2 show correlations between all three evaluations of somatic symptoms. The data obtained indicate that there is no significant correlation between the children's self-assessment and the parents' assessment of the children's somatic symptoms, neither for subscale frequency nor for subscale severity. The correlation between the self-assessment of somatic symptoms by children and parents was also low and not significant (Table 2).

To gain more valuable insight into the relationships between children's and parents' assessment of the child's somatic symptoms, the percentages of participants (%) in each category of responses to the question: How often have you/your child experienced this symptom in the last three months were calcu-

Table 2. *Correlation coefficients between the PSS self-assessment of the children, the assessment of the somatic symptoms of the children by the parents and the self-assessment of the parents*

		PSS Children's self-assessment	
		frequency	severity
PSS Parent assessment of child's symptoms	frequency	.02	.01
	severity	.15	.12
PSS Parent self -assessment	frequency	.18	.08
	severity	.19	.10

*$p<.05$

Table 3. *Proportion of children (%) in each category of answers to the question How often have you experienced this symptom in the last three months (N=61)*

	Somatic symptoms	Never	A few times a month	A few times a week	Almost every day
1.	Headaches	36.06%	42.62%	14.75%	6.56%
2.	Vertigo	70.49%	4.92%	24.59%	0%
3.	Back pain	60.66%	26.23%	6.56%	6.56%
4.	Lack of energy / Fatigue	18.03%	52.46%	21.31%	8.20%
5.	High body temperature	68.86%	29.51%	1.63%	0%
6.	Pain in joints	67.21%	27.87%	3.28%	0%
7.	Pain in arms or /and legs	59.02%	27.87%	6.56%	6.56%
8.	Loss of balance	90.16%	8.20%	0%	0%
9.	Muscle tenseness	72.13%	21.31%	4.92%	0%
10.	Muscle weakness	78.69%	18.03%	0%	0%
11.	Lump in throat	83.61%	13.11%	3.28%	0%
12.	Double vision	86.89%	9.83%	0%	3.28%
13.	Blurred vision	77.05%	14.75%	6.56%	0%
14.	Sudden loss of sight	90.16%	6.56%	3.28%	0%
15.	Sudden loss of voice	100%	0%	0%	0%
16.	Fainting	100%	0%	0%	0%
17.	Sudden memory loss	90.16%	9.84%	0%	0%
18	Heart beating too fast	54.10%	29.51%	11.48%	4.92%
19.	Pain in chest	88.52%	8.20%	3.28%	0%
20.	Nausea	37.70%	50.82%	9.84%	0%
21.	Pain in stomach	47.54%	44.26%	6.56%	0%
22.	Diarrhoea	75.41%	22.96%	0%	0%
23.	Vomiting	78.69%	18.03%	0%	3.28%
24.	Bloated stomach	78.69%	18.03%	0%	3.28%
25.	Appetite loss	47.54%	40.98%	6.56%	4.92%
26.	Food intolerance	57.38%	29.51%	11.48%	0%
27..	Constipation	91.80%	4.92%	3.28%	0%
28.	Heart - burn	78.69%	21.31%	0%	0%
29.	Breathing difficulties	78.69%	18.03%	3.28%	0%
30.	Sense of choking	95.08%	4.92%	0%	0%
31.	Skin rash	81.97%	11.48%	0%	3.28%
32.	Skin itching / redness	85.24%	11.47%	0%	3.28%
33.	Acne and pimples	60.66%	9.84%	13.11%	16.39%
34.	Cold (sore throat, cough, etc.)	14.75%	55.74%	19.67%	9.84%
35.	Over - perspiration	63.93%	21.31%	8.20%	6.56%

Table 4. *Proportion of parents (%) in each category of answers to the question How often has your child experienced this symptom in the last three months (N=61)*

	Somatic symptoms	Never	A few times a month	A few times a week	Almost every day
1.	Headaches	65.57%	34.43%	0%	0%
2.	Vertigo	98.36%	1.64%	0%	0%
3.	Back pain	81.97%	18.03%	0%	0%
4.	Lack of energy / Fatigue	59.02%	37.70%	3.28%	0%
5.	High body temperature	63.93%	34.43%	1.64%	0%
6.	Pain in joints	80.33%	19.67%	0%	0%
7.	Pain in arms or /and legs	85.24%	14.75%	0%	0%
8.	Loss of balance	100%	0%	0%	0%
9.	Muscle tenseness	95.08%	4.92%	0%	0%
10.	Muscle weakness	96.72%	3.28%	0%	0%
11.	Lump in throat	93.44%	6.56%	0%	0%
12.	Double vision	98.36%	1.64%	0%	0%
13.	Blurred vision	95.08%	4.92%	0%	0%
14.	Sudden loss of sight	98.36%	1.64%	0%	0%
15.	Sudden loss of voice	100%	0%	0%	0%
16.	Fainting	100%	0%	0%	0%
17.	Sudden memory loss	100%	0%	0%	0%
18.	Heart beating too fast	96.72%	3.28%	0%	0%
19.	Pain in chest	100%	0%	0%	0%
20.	Nausea	85.24%	13.11%	1.64%	0%
21.	Pain in stomach	67.21%	27.87%	1.64%	0%
22.	Diarrhoea	70.49%	27.87%	1.64%	0%
23.	Vomiting	80.33%	18.03%	1.64%	0%
24.	Bloated stomach	88.52%	11.47%	0%	0%
25.	Appetite loss	86.88%	13.11%	0%	0%
26.	Food intolerance	85.24%	11.47%	1.64%	1.64%
27.	Constipation	90.16%	8.20%	1.64%	0%
28.	Heart - burn	98.36%	1.64%	0%	0%
29.	Breathing difficulties	93.44%	3.28%	1.64%	1.64%
30	Sense of choking	96.72%	3.28%	0%	0%
31.	Skin rash	90.16%	4.92%	4.92%	4.92%
32.	Skin itching / redness	86.88%	8.20%	4.92%	0%
33.	Acne and pimples	62.29%	24.59%	3.28%	9.84%
34.	Cold (sore throat, cough, etc.)	34.43%	63.93%	0%	1.64%
35.	Over - perspiration	88.52%	4.92%	4.92%	1.64%

lated. These results are presented in Tables 3 and 4. The data obtained suggest that children generally reported more somatic symptoms and that these symptoms bothered them more than their parents think. For example, the children reported headaches (42.62%), lack of energy/fatigue (52.46%), nausea (50.82%) or stomach pain (50.56%) a few times a month. However, 34.43% of parents reported that their children had headaches few times a month, 37.70% of them reported energy loss/fatigue, 13.11% nausea and 27.87% of parents reported stomach pain.

Furthermore, correlation coefficients between the children's self-assessment and the parents' assessment of the children's somatic symptoms were calculated for each item. Significant correlations ($p < .05$) were found for 9 symptoms: complete agreement was found in the assessment of two symptoms that appeared to be very rare (Table 3 and 4): sudden loss of voice and fainting, followed by double vision ($r = .61$), skin itching/redness ($r = .57$), diarrhoea ($r = .52$), rash ($r = .46$), blurred vision ($r = .45$), acne and pimples ($r = .45$) and food intolerance ($r = .29$).

Discussion

Psychological assessment of the somatic symptoms of children requires gathering information from various sources. The use of a valid and reliable self-reporting questionnaire consisting of a comparable assessment scale can be used adequately to determine the severity of internalised symptoms and to provide insight into discrepancies between parents and children in the assessment of children's somatic complaints.

The prevalence of the occurrence of somatic symptoms has been investigated by a large number of researchers (Petersen, Berstorm, & Brulin, 2003; Romero-Acosta et. al., 2013; Vulić-Prtorić, 2016). Some authors pointed out that it is useful to include different sources of information when assessing somatic symptoms, as this provides a relatively detailed insight into certain issues (Garber, et. al., 1998; De Los Reyes & Kazdin, 2004; Pirinen, et. al., 2011). Children are considered a reliable source of information when it comes to assessing their own internal processes, behaviour or social relationships (Andrasik, Powers & McGrath, 2005). In particular, access to information by a child, parent or other evaluator can provide a complete picture of the child's emotional, cognitive, social and behavioural functioning.

The relationship between the reports of children and their parents about the way both assess the somatic symptoms of the children was the aim of this study. No significant correlations were found, and these results are consistent with the findings of previous studies that children reported more internalised

symptoms such as anxiety or somatic complaints than their parents (De Los Reyes and Kazdin, 2004). The degree of disagreement between the child and parents about the assessment of the child's symptoms is relatively high when it comes to the assessment of symptoms that are ambiguous and diffuse (Santalahti et al., 2005). The study conducted by Scaini, Ogliari, De Carolis, Bellodi, Di Serio and Brombin (2017) is another in a series of studies that focused on understanding and identifying the factors that contribute to the disagreement between children's and parents' reports of the child's symptoms. Using a self-reporting questionnaire, the authors concluded that children report significant information about anxiety symptoms to such an extent that they contribute to different perspectives in assessing this symptomatology. It is important to emphasise that parents usually minimize the problem or misinterpret it as a child's conflicts with teachers, inconsistent performance of duties, or failure to follow house rules (Kashani, Orvaschel, Burk, & Reid, 1985). In this study, a correlation between the children's self-assessment and the parents' assessment of the children's somatic symptoms was observed for each item. A significant correlation was found for 9 somatic symptoms: four from the pseudoneurological area - sudden loss of voice, fainting, double vision and blurred vision, three from the dermatological area - itching/redness, rash, acne and pimples, and two from the gastrointestinal area - diarrhoea and food intolerance. The fact that these symptoms are relatively easy to perceive could explain the significant correlations obtained. In addition, some authors pointed out that the disagreements could go in the opposite direction, i.e., that parents overestimate the extent to which their child suffers from any kind of internalized symptoms (Garber, Slyke, Walker, 1998). Higher levels of parental distress or the nature of their psychopathology may contribute to such overestimation. Children and parents usually point to different aspects of the child's difficulties, but this does not exclude that both are right, even partially (De Los Reyes & Kazdin, 2004).

In addition, the data from the present study suggest that the majority of parents reported that their children had fewer somatic symptoms and they reported that these symptoms were less severe for their children compared to the children's self-reports. Respondents in this sample reported varying degrees of somatic symptoms in their children. For example, 50.82% of the children reported suffering from nausea a few times a month, and yet 13.11% of parents reported the same frequency. It is possible that children and parents have different problem areas, so their reports may reflect these differences. In other words, children may be more concerned that they suffer from somatic symptoms that interfere with their daily activities such as completing schoolwork, while their parents express concern about the child's inconsistent performance of schoolwork. These two informants may differ in their sensitivity and tolerance to the child's difficulties. Another possibility is that the parents' attitudes towards

health and illness, their perception of physical symptoms and their previous experience of illness and physical symptoms may reflect their assessment of the child's symptoms and thus contribute to these outcomes (van Tilburg, et. al., 2015). Although physical symptoms and the experience of these symptoms as a source of discomfort are subjective experiences, the non-verbal communication, facial expressions or words that individuals use to describe physical symptoms can determine the severity of the symptoms to a greater or lesser extent and thus be more or less accessible to others in the person's environment. However, if a person does not communicate physical symptoms in this way, the sources of their discomfort may go unnoticed by others. Some children do not tend to express their concern about their own physical symptoms, either verbally or non-verbally, so that the parents would not pay attention to their child's problems, which could be reflected in the parents' assessment of their child's physical problems. The results underline the importance of interviewing children for clinical and research purposes, as the frequency and duration of somatic symptoms affect the child's quality of life and the daily family routine influences the child's coping strategies.

Moreover, when the relationship between the self-assessment of somatic symptoms by children and parents is taken into account, these results suggest that there is no significant correlation between the self-assessment of children and the self-assessment of parents (Table 2). There is a general belief that people who frequently have somatisation problems have a family member with similar symptoms, and the latter may have been adopted by modelling or observing the "disease behaviour" of these family members (Levy, Whitehead, Walker, von Korff, & Feld, 2000). Principles of social learning theory suggest that rewarded behaviours indicate a higher frequency and intensity of occurrence. If somatization is demonstrated at its onset, the likelihood that the same behaviour will continue would increase. To be more precise, some researchers implied that parental protective behaviour can increase the child's disability and pain, and that children can learn to perceive and interpret somatic symptoms in a similar way to their parents (e.g. as non-threatening or threatening) (Van Tilburg et. al., 2015). In this study there is a possibility that children may have adopted "illness behaviour" from another family member who did not participate in the task of assessing their own and the child's symptoms, so this fact may have contributed to the insignificant correlations. Furthermore, the theory of social learning predicts that the caring of the individual is related to changes in pain, but in the current study, disease behaviour was not measured but symptoms were reported (Van Tilburg et. al., 2015).

Finally, it should be noted that some methodological limitations may be reflected in the results of this research. First and foremost, these limitations are

due to the conditions under which the data were collected, as the research was conducted in small classes with many parents or children. Moreover, it was carried out during class or before exams, it was retrospective, the parents were examined in the evening hours, before the start of the PTA meetings. Mentioned situations could have caused discomfort or fatigue, which may have been reflected in the questionnaire that recorded motivation. Similarly, the degree of intimacy and social desirability of the questions may have influenced the answers on the questionnaire, but attempts were made to minimise this influence by informing participants that there were no correct or incorrect answers and that participation in the survey was completely anonymous. Further research on somatic symptoms should also examine behavioural, cognitive and emotional aspects of somatic symptoms in order to obtain a more coherent picture of somatic symptoms and how they influence daily activities. The use of the PSS scale should be accompanied by the use of a clinical interview, which would allow a better understanding of the results obtained with the scale. Therefore, these methodological limitations in research should be controlled in the future.

It is necessary to raise awareness in society about the prevalence and intensity of somatic symptoms in the child population, as the frequency of their occurrence may reflect the quality of life of the individual. Therefore, the organisation of psychoeducational workshops on this topic, providing information on somatic symptoms and an appropriate response to their occurrence, should be a top priority. On the other hand, as statistical analyses are based on grouping results, more diagnostic and anamnestic data should be collected for clinical purposes in order to make an appropriate diagnosis. Clinicians should expect a relatively low level of agreement between the assessment of the child's symptoms by the child and the parents, and if the disagreement is such that the parents overestimate the number and intensity of the symptoms experienced by the child, then the degree of parental distress should be assessed. It should be noted that this disagreement is not necessarily related to whether someone is right or wrong. In reality, each evaluator is a unique source of information, so parents should be asked to explain the child's daily behaviour, while the child should be asked about his or her inner state in order to gain a comprehensive insight into the child's psychological and social world.

Conclusion

The aim of this study was to investigate the relationship between the children's self-assessment and the parents' assessment of the children's somatic symptoms (frequency and severity). The results obtained show that, in line with other findings, no significant correlation between the children's self-as-

sessment and the parents' assessment of the children's somatic symptoms could be found. Furthermore, no significant correlation between the self-assessment of somatic symptoms by children and parents could be found in this study. The results also indicated that parents had a significant tendency to report that their children had fewer somatic symptoms and that these symptoms were less severe compared to the children's self-reports. Various problem areas, differences in tolerance and sensitivity to the child's difficulties, the fact that most of these symptoms are internalised and not easily perceived, and some methodological limitations may have contributed to these results. These data could help clinicians to determine the difference and importance of each informant's contribution to better understand somatic complaints in children and to develop an appropriate intervention plan.

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Aspects of natural mentoring relationships and adolescent positive development

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Abstract

The goal of this paper was to examine and describe the characteristics of natural mentors and characteristics and functions of natural mentoring relationships. According to the Model for the Influence of Mentoring Relationships on adolescent development (Rhodes et al., 2006), we hypothesized three main functions of natural mentoring relationship for adolescents, namely support for psychological well-being, positive identity, and cognitive well-being. The data were collected from 277 high school students (56% female, M = 16.53 years). They answered open-ended questions about the situations and places where they meet with their natural mentors, topics they discuss with them, and their most common topics of conflict. Adolescents also described the ways in which natural mentors help them in their everyday lives. Their

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answers were coded and structured into themes with thematic analysis. The findings show that more than half of the natural mentors in this study are relatives with adolescents and adolescents see them at family gatherings or when visiting each other's homes. The most common topics of conversation are school, common interests, or the youths' friends and friendships. Although conflicts with natural mentors were shown to be rare, the most common discussions were about certain behaviour or lifestyle choices. The forms of support were, as expected, divided into three main categories – support for psychological well-being, positive identity, and cognitive well-being. This research confirms the Model of the Influence of Mentoring Relationships and gives important new insights into the context of natural mentoring relationships in Croatia.

Keywords: natural mentors, well-being, Positive Youth Development

Introduction

Researchers in the field of developmental science look at adolescence as a time of life when an individual can develop personal and contextual assets (Benson, Scales, & Syversten, 2011). The framework focusing on adolescent's potential, capacities and strengths is called the Positive Youth Development framework (Lippman, Moore, & McIntosh, 2011). When discussing resources that are important for the development of adolescent's positive outcomes, several of them need to be pointed out (Lerner, 2005). Among individual assets, the most important concepts seem to be self-regulation and hopeful future expectations (Mueller et al., 2011), while acknowledging the importance of self-esteem, spirituality, knowledge, skills and motivation to do well (Lerner, Alberts, Jelicic, & Smith, 2006). In the area of ecological or contextual assets, researchers highlight the importance of access to educational, recreational, and civic institutions, and supportive positive relationships with caring committed adults in the adolescents' social networks (Theokas & Lerner, 2006). One type of significant supportive positive relationship, proven to relate to positive youth development outcomes, is with supportive adults seen as natural mentors.

Compared to the adolescents' relationship with their parents, relationships that adolescents have with other supportive adults are an under-researched area of support (Bowers et al., 2014). Those adults are often found amongst their relatives or through school and leisure activities like sports, music or youth groups (Hagler & Rhodes, 2018; Spencer, 2007; Zimmerman, Bingenheimer, & Behrendt, 2005). The support from non-parental supportive adults has characteristics of both parent and peer support which the adolescents may find appealing. They can provide adolescents with a broader perspective, knowledge and experience while still maintaining equality with their companionship. There are several names to describe these influential adults (e.g., *significant others,*

supportive trusted adults, VIPs-very important nonparental adults, informal mentors), but most of the researchers in this field use the term natural mentors (Spencer, 2007; Zimmerman et al., 2005). Research on natural mentors often portrays these individuals as available caring adults, with younger adolescents of the same sex as their mentors which changes to cross-sex matches as adolescents grow older (Liang, Spencer, Brogan, & Corral, 2008), while there's rarely data about the age of natural mentors. Data shows mentors who are kin and non-kin with the adolescents, with most of the research in the USA indicating equal representation of both kin and non-kin mentors, even when including different ethnic groups (Haddad, Chen, & Greenberger, 2011). The social role of mentors is often connected to the setting of the relationship, with kinship pairs often seeing each other in family centred events, knowing each other longer and providing different types of support. The different roles of natural mentors are related to differences in natural mentoring relationships, but adolescents may also differ in their own perception of the mentor and value they put on this relationship, how important this person is to them and do they see them as a role model (Beam, Chen, & Greenberger, 2002). Literature suggests that natural mentoring occurs in certain domains of life indicating a high prevalence of the self-development, school and college domains (Kelley & Lee, 2018). To the best of our knowledge, there is no information in the literature about the topics of agreement and disagreement in natural mentoring relationships that could explain more of the everyday functioning of these relationships.

A recent meta-analysis of natural mentoring relationships by Van Dam and colleagues (2018) found that these relationships are related to better social-emotional, educational, and vocational outcomes in adolescents. However, research is still lacking about the processes in these relationships through which mentors can provide support for positive developmental outcomes (Miranda-Chan, Fruiht, Dubon, & Wray-Lake, 2016). Rhodes, Spencer, Keller, Liang, and Noam (2006) proposed the Model for the Influence of Mentoring Relationships. This conceptual model explains processes of support happening in mentoring relationships which could result in the enhancement of adolescent's personal competence and are often connected to personal youth development concepts. This model was developed to explain formal mentoring but there is a need to test its propositions and use in natural mentoring relationships where such frameworks are not yet developed. According to the model, there are three main ways of support for adolescent development – social and emotional support, support for cognitive development and support for identity development. The first is the emotional support mentors can give to adolescents by helping them feel better through their companionship and support, but also by giving advice to adolescents and space for developing social skills that could help overall adolescent social functioning. The second way is through helping

adolescents to see what kind of person they could become and allowing them to observe the possibilities of character and personality they could develop. By being role-models to them, but also advising them what not to do, mentors can enhance adolescent positive identity development. The third way is by providing adolescents with the opportunities to enhance their knowledge and skills or encouraging school-related opinions and motivation. Another way to support cognitive development in adolescents is through exercising more advanced cognitive skills like decision making, planning or metacognition. The framework is still lacking research evidence in natural mentoring relationships, especially outside of the US.

Research into the perspective of positive youth development and the conceptualization and study of important adults and their relationship with adolescents are new areas and directions of research. This shift from just studying the presence of adults in adolescent life to a deeper understanding of the importance of relationships with important adults for positive youth development is a frequent recommendation found in recent work (Bowers et al., 2014; Erdem et al., 2010). The characteristics of persons that adolescents recognize as important and the nature of their relationship depend on the social and cultural context (Chen et al., 2003) and this paper provides a better insight into this area in Croatia. This paper also attempts to explore the ways in which relationships with important adults specifically help young people and provide empirical support for the theoretical assumptions of Rhodes' model (2005) on the three processes of action and function of these relationships. To the best of our knowledge, this is the first study in Croatia that aims to examine the context of natural mentoring relationships and ways natural mentors influence adolescent development using the Positive Youth Development framework.

The goal of this paper was to examine and describe characteristics of natural mentors and characteristics and functions of natural mentoring relationships. Specifically, we examined kinship status, social role and certain sociodemographic characteristics of mentors, as well as the importance of mentors for adolescents, situations and places where adolescents meet with their natural mentors, topics they discuss and the most common topics of their conflicts, and the ways in which natural mentors help adolescents. Based on the previous findings, we expected that natural mentors are both kin and non-kin related to adolescents, that adolescents highly value their mentors and see these individuals as role models, and that adolescent and mentor are of the same sex. We expected they discuss topics about adolescent's self-development and school, and meet at familiar places (e.g., home), but cannot give specific expectations of topics of conflict. In accordance with the Model for the Influence of Mentoring

Relationships (Rhodes et al., 2006), we expected that mentors help adolescents mainly in three ways by giving adolescents social and emotional support, support for cognitive development and support for identity development.

Method

Participants

The participants were 277 high-school students attending first to fourth grade of one high-school in Zagreb, Croatia. The average age of the participants was 16.5 years old (SD = 1.18) and 56% were girls. Most of them lived with both of their parents (79.9%), and a minority lived with their mother (14.7%) or father (1.5%). Additionally, 3.7% of students live with one parent and their new spouse, and 0.4% with a guardian.

Measurements

Characteristics of natural mentor

Using questions developed for the purpose of the study, we examined the characteristics of natural mentors. Adolescents reported on whether they currently have a natural mentor in their life. Those who do recognise that figure in their lives then reported on several characteristics of their mentor:

a) Kinship status – Adolescents reported if the person who is their natural mentor is related to them (*a*-yes, *b*-no).

b) Social role – Adolescents chose the category that their natural mentor belongs to among the following categories created on the basis of previous research (Beam, et al., 2002; DuBois & Silverthorn, 2005; Haddad, et al., 2011): older sibling, parent's new partner, grandparent, aunt/uncle, cousin, godparent, parent's friend, their own older friend, teacher, coach, priest/religious teacher, and other (they could write a role).

c) Sociodemographic characteristics – Adolescents reported on the gender and age of their natural mentor.

Adolescent's perception of their natural mentor

Using questions developed for this study, adolescent's perception of their natural mentors was examined, namely importance of the mentor and whether adolescents perceive their mentors as role-models. Adolescents reported how important their mentor is to them on a five-point scale from 1 - "not that important" to 5 - "key person in my life", and whether they see their natural mentor as a personal role model in their life (*a*-yes, *b*-no).

Context and functions of the relationships

Adolescents reported on several open-ended questions developed for the study about the context and functions of natural mentoring relationships. Adolescents could write one or more answers to each question. The questions concerned usual situations and places where adolescents meet with their natural mentors, topics they discuss with them, their most common topics of conflict, and the ways in which mentors help them.

Sociodemographic characteristics of the participants

The data on adolescents' age, gender, and grade were collected. Adolescents reported on their family structure by choosing an answer to the question with whom they live (*a*-both parents, *b*-mother, *c*-father, *d*-guardian, *e*-other).

Procedure

The ethical permission for data collection was obtained from the Ethics Committee of the Catholic University of Croatia. Before data collection, participants and their parents were informed about the research through an information form. A passive consent procedure was followed, so those who did not wish to participate in the research were asked to sign the form. At the start of data collection, students were informed about the definition of natural mentor used in this research ('Someone at least 21 years old who has had a significant influence on the adolescent or whom the adolescent could count on in times of need'; Beam, et al., 2002, p.3.). Adolescents were advised to think if they have such a person that would fit that description and answer the questions about the one, most important natural mentor. Adolescents who didn't identify a mentor were invited to fill out the rest of the questionnaire. From the 300 students who were invited to participate in the research, 5 decided not to participate, 8 were not present at school on the day of data collection and 10 were excluded from the analysis. Reasons for exclusion from further coding were nominating a parent or a partner as a mentor which contradicts the theory describing a natural mentor.

Analysis

Adolescents' answers about the characteristics and functions of natural mentoring relationships were coded by a researcher and organised into themes. Data analysis included coding and structuring adolescent's responses with the use of thematic analysis (Braun & Clarke, 2013). The answer from one student could describe one topic or a function and that would account as one contribution or code, and if they listed different topics or types of support they would be numbered as different contributions and different codes would be given.

When testing the Model for the Influence of Mentoring Relationships (Rhodes et al., 2006), the authors used the research of Miranda-Chan et al. (2016) for suggestions on organising codes into subthemes and subthemes into main themes. In their research they have organised 1350 codes into 19 functions of natural mentoring relationships and assigned them into three meta-functions, namely socioemotional development, cognitive development, and identity development following the Rhodes Model (Rhodes et al., 2006). This scheme of organising codes was presented in a taxonomy table. As in their research, the assigning of codes in this study was theory-driven, and the coder examined the codes three times. Firstly, to familiarise themselves with the codes, secondly to assign them into one of the three meta-function categories and thirdly to check for and then decide about any unassigned codes or codes that do not fit easily into any of the categories. The answers were coded by one researcher and then checked by another.

Results

When asked about the presence of a mentor, 80.5% of adolescents reported they have someone who fits the description. All the presented percentages of results refer to the percentage of those who recognised a natural mentor.

Characteristics of natural mentors

The average age of natural mentors was 40 years (range: 21-85), 55% of them are women, 62.2% of them are of the same sex as the adolescent and 69.4% of them are related to the adolescent. Natural mentors are older siblings (20.8%), grandparents (20.4%), aunts and uncles (17.6%), godparents (12.2%), older friends (5.9%), coaches (5.9%) and cousins (5.2%). Other mentioned roles were teachers, music teachers, parents of their friends, new partners of parents and priests. Adolescents reported that mentors are highly important to them ($M = 3.79$, $SD = 0.84$). When asked about the role model, 60% of adolescents reported that they see their natural mentor as a role model.

Characteristics of natural mentoring relationships

When asked to describe the most common situations of spending time together and places where they meet with their mentors, adolescents reported (301 code in total) that they usually meet with mentors at family gatherings (18%), visiting each other at home (14%), living together (12%), having lunch (12%) or coffee (9%) and travelling or spending the holidays together (10%). Other situations and places included training and sports events (6%), cultural events like concerts and exhibitions (4%), special occasions like birthdays (5%), situations of learning (3.3%) and other (6%).

There were in total 614 topics adolescents and mentors often talk about and 153 topics of conflict (whereas 40% of the students have not reported any topic of conflict or reported they agree about everything with their mentor). The most commonly occurring themes of discussion were about school or school-related topics (20% of all themes) and interests they share like films, music or books (13.5%). Adolescents also reported that they often share situations they have with their friends or the topic of friendship generally (10%) or discuss life topics (7.5%). Topics adolescents mentioned frequently involved their family (6.4%), career guidance (6.2%), personal issues and problems they face (6.2%) and issues regarding romantic life (5%). A significant number of adolescents also referenced they could talk about everything with their natural mentors ('everything' being 5% of all coded topics).

When reporting about the most common topics of conflict or misunderstanding with their natural mentors, adolescents revealed conflicts around certain behaviours and lifestyle choices, like smoking or going out (17.6% of all themes) being the most common. Adolescents also wrote about not agreeing with their mentors about interests such as sport and music (16.3%), school and its importance (11%), politics (10.5%) and religion (8.5%). Other reported areas of conflict are disagreements around diets, disapproval of friends and partners, decisions about the future and misunderstanding caused by the age difference between the adolescent and their natural mentor.

Functions of natural mentoring relationships

Adolescents were also asked about the functions or forms of influence of natural mentoring relationships on them, namely by providing ways of how natural mentors or relationships help them in their everyday life. The thematic analysis of 328 codes revealed three main themes: support for psychological wellbeing, positive identity, and cognitive development.

The most reoccurring theme in the adolescents' answers that accounted for 40% of all answers was coded as personal psychological wellbeing. The answers included different means of how natural mentors help adolescents feel better or provide emotional and social support. Some examples of adolescents' answers are: '*She gives me good advice*', '*He makes me feel better with his jokes...*', '*Biggest help is that she lets me know she's there if I need her...*', '*Lifts my spirit when I'm upset or under stress*'.

The second occurring theme is in the category of support for adolescent's positive identity development and contains 33% of all the answers provided by adolescents. It involves topics of moral dilemmas (e.g. '*...helps me decide what's right and wrong...*', '*She encourages me to do good things*'), encouraging healthy choices (e.g. '*He makes me go work out to stay healthy and build my character...*'), and inspiring and role-modelling (e.g. '*He inspires me*').

The third category or theme contains answers about methods of supporting the development of cognitive skills and knowledge (e.g., '*Helps me with important choices*') or helping and encouraging with school-related tasks (e.g., '*He motivates me to study...*', '*She advises me how to approach studying*', '*... she helps me with studying*'). It included 26% of the answers.

Discussion

This research aimed to examine the characteristics of natural mentors and natural mentoring relationships among adolescents in Croatia, including the functions of these relationships, namely the ways natural mentors support adolescent's development. As empirical evidence for the Model for the Influence of Mentoring Relationships is scarce (Rhodes et al., 2006), using answers obtained in this study, we tested the proposed ways of mentors' support for adolescent development.

The results show that the most important non-parental adults are adolescent's relatives which highlights the importance of family connections for Croatian adolescents. The majority of natural mentoring relationships in this study were with members of the extended family which are also shown in research in the US (DuBois & Silverthorn, 2005; Haddad, et al., 2011; Zimmerman et al., 2005), although not to that extent. That could also be a distinct feature of Croatian culture and values that highlight the importance of family and familial relations for Croatian adolescents (Bouillet, 2004; Matulić, 2002).

When examining the topics adolescents discuss with their natural mentors, it is documented that adolescents mostly share about the topics that are important aspects of their lives and identity formation (friendships and school). The most common topics of mentor-adolescent conversation could give additional evidence for the normativity of these relationships and the presence of mentors in adolescent's lives. The purpose of these relationships seems to be linked to everyday experience of adolescents and not only to specific troubles or opportunities adolescents experience (Liang et al., 2008). It is also important to highlight how adolescents acknowledge the common interests they share with their mentors like movies or books, which brings them closer to their natural mentors. This is something often used when matching mentors and mentees in formal mentoring relationships (Dolan & Brady, 2012: DuBois, Holloway, Valentine, & Cooper, 2002), but happens spontaneously and naturally in natural mentoring relationships. Topics of conflict, or more commonly disagreements, are around lifestyle choices or behaviours like smoking. These are aligned with common disagreements adolescents have with their parents. Adults often see situations as social norms and adolescents as personal choices

(Laursen & Collins, 2009; Steinberg & Silk, 2002), which may lead to different approaches to deciding and understanding different types of behaviour.

The functions of relationships found in this study confirm the prepositions of the Model for the Influence of Mentoring Relationships (Rhodes et al., 2006), with a similar distribution of results with regard to the ways mentor's influence adolescents found in the US studies (e.g., Miranda-Chan et al., 2016). Through spending quality time together, mentors help adolescents feel better and exercise their social skills, by providing an adult presence, emotional sharing, use of effective communication skills and coping strategies. As role models, mentors can be an example of positive identity but also encourage, recognise and provide approval that can benefit the adolescent. With the mentor's guidance or intellectual challenges, adolescents can experience new ways of learning and receive help for understanding the course material. Mentors are also found to promote positive attitudes towards learning, education and acquiring new knowledge, which dominated the responses in this category.

The three forms of mentors' support represented in the model are also seen as mutually connected. Often advances in one area can bolster advances in the other two (Schwartz, Lowe & Rhodes, 2012). Future research should examine in more depth how these processes of support are interconnected or if one certain type of mentoring would provide support for a specific developmental outcome. Maybe young people report on the type of support that is most important to them, while other forms are also present but not declared. Also, recent findings connect the social roles of natural mentors with different focus of influence, distinguishing between 'strong ties' adolescents have with their relatives and 'weak ties' they have with unrelated adults such as their teachers, coaches or religious leaders, that could introduce them to more opportunities (Hagler & Rhodes, 2018). Raposa, Erickson, Hagler and Rhodes (2018) suggest how connections to 'weak ties' are even of more importance to low-income youth, so exploring more individual and environmental characteristics of these relationships is welcomed.

This research brought new insight into adolescent perception of natural mentors by acknowledging the importance of natural mentors for adolescents and the role-modelling they provide. More research should account for these variables with a deeper understanding of the value young people put on the support they receive from their mentors and the influence mentors have on their lives. There is also a need to explore more of how these relationships fit into adolescent's social networks and how they are interconnected to relationships with parents and peers.

One of the main limitations of the study was that adolescents provided short answers without explanations, and this impediment could be overcome

through more in-depth qualitative methods. The answers were only coded by a researcher and checked by another, but more researchers in the coding process could bring more rigour to the analysis process. Future studies should examine natural mentoring relationships using samples of adolescents and mentors who have different sociodemographic characteristics. Aware of the limitations of the study, the results of this study provide new insight into different aspects of natural mentoring relationships in the Croatian context, where this is a new topic of research. Also, the study contributes to the body of knowledge by testing one of the broadly acknowledged models of mentoring. This study also adds to the contemporary framework of positive youth development and the importance of adolescents being the active constructors of their social networks and their development in general.

Conclusion

As one of the first studies of natural mentoring in Croatia, this research gives new insights into the concept of natural mentoring relationships, their setting and functions that can serve in enhancing positive youth development. Natural mentors are mostly relatives of the same sex as adolescents. Adolescents report that mentors are very important persons for them and see them as role models. Adolescents and mentors spend time together in family-oriented gatherings around the topics of school, friends, and shared interests. The topics of disagreements between adolescents and their mentors are mostly around lifestyle choices and appropriate behaviours of adolescents. The results provide evidence for the three main ways natural mentors support adolescents: by providing support for their psychological wellbeing, positive identity formation and cognitive development.

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Men are from Mars, women are from Venus: Gender differences in affective processing

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Abstract

Emotions are very important in directing human behaviour and interactions, and affective processing could be of vital importance for individuals. Although gender differences in emotion recognition and reactions are one of the most robust gender stereotypes, its' empirical support is far less consistent than might be expected. Therefore, the aim of this study was to investigate gender differences and the role of empathy in affective processing using emotion recognition and affective picture rating tasks. The study was conducted on a convenience sample of 144 adults (43.1% male, 19-33 age old, M_{age} = 22.18, SD_{age} = 2.26). Firstly, participants completed the Affective and Cognitive Measure of Empathy, followed by the emotion recognition and picture rating tasks presented via tablet. In the emotion recognition task, photographs

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showing six basic emotions from The Karolinska Directed Emotional Faces (KDEF) were presented to participants whose objective was to correctly label the emotions. For the picture rating task, pictures differing in valence and arousal were selected from the International Affective Picture System (IAPS) and presented to the participants who completed self-report measures of emotional experience after each trial. Response latency was measured during both tasks. The results indicated a female advantage in overall accuracy and speed of emotion recognition in addition to their higher accuracy and shorter response latency in recognizing specific emotions. In the affective picture rating task, females rated negative pictures more negatively than males, and those pictures induced higher arousal in them compared to males. Gender differences in empathy emerged as well, with females obtaining higher results than males on measures of affective empathy. The results of this study corroborated gender differences in emotion recognition ability. Additionally, gender differences in relations of empathy and affective processing revealed interesting patterns in line with previous research in this field.

Keywords: gender differences, empathy, affective processing, KDEF, IAPS

Introduction

Emotions are very important in directing human behaviour and interactions, and facial expressions are among the first and primary cues of humans' emotional states. Affective processing (the ability to recognize and appropriately react to emotional cues) could be of vital importance for individuals. Research generally shows that people are more successful in recognizing expressions of positive emotions (e.g., happiness) than negative ones (e.g., anger, fear, sadness, disgust) (e.g., Dimberg & Lundquist, 1990; Gregorić et al., 2014; Leppänen & Hietanen, 2005; Tracy & Robins, 2008). From the evolutionary perspective, emotional expressions signal important messages (e.g., anger-threat, fear-danger, happiness-willingness to engage in an activity, surprise-something unexpected that rapidly changes into another emotion), so it could be expected that emotions which have important survival benefit (i.e. signalling threat and danger) should be more accurately recognized than ones which do not have obvious survival benefit (e.g., sadness; Smith & Schyns, 2009). However, in comparison to negative emotions, expressions of happiness and surprise are visually simpler and produce particularly clear signals (very characteristic facial expression), so it could be expected that the recognition of these emotions is quicker and more accurate, while expressions of negative emotions, and emotions that convey hostility are often confused by participants (e.g., Dimberg & Lundquist, 1990; Gregorić et al., 2014; Tracy & Robins, 2008).

The available evidence suggests a female advantage in emotion recognition accuracy, particularly for negative emotions, such as fear and sadness (e.g., Campbell et al., 2002; McClure, 2000; Montagne, Kessels, Frigerio, de Haan,

& Perrett, 2005; Thompson & Voyer 2014); however, some studies have found mixed results (e.g., Rahman, Wilson, & Abrahams, 2004) or no gender differences at all (e.g., Grimshaw, Bulman-Fleming, & Ngo, 2004).

In cases when emotion recognition is near the maximum possible (ceiling effect), gender differences in accuracy are unlikely to emerge. Thus, some researchers use response time as a more sensitive measure, as it should produce larger gender differences than accuracy measures (see Tracy & Robins, 2008). There is consistent evidence showing that positive facial expressions (happiness) are recognized faster than negative (anger, disgust or sadness) or emotionally neutral facial expressions (see Leppänen & Hietanen, 2005; Tracy & Robins, 2008; Williams et al., 2009), and some evidence showing that females are faster in correctly classifying facial expressions of emotions (e.g., Rahman et al., 2004).

Emotion recognition is a prerequisite for empathy. Empathy, in the most general sense, refers to the ability to understand, share and adequately respond to the affective experiences of others and it is comprised of two components: an affective and a cognitive one, which have been confirmed in neuropsychological research (Shamay-Tsoory, Ahoron-Peretz, & Perry, 2009). There is some evidence for different neurobehavioural basis of empathy and emotional experience in women and men (see Christov-Moore et al., 2014), with differences in the mirror-neuronal system underlying empathy (Cheng et al., 2009), greater neural activity in emotional regions when solving empathy tasks in females (Derntl et al., 2010), greater extrastriate activity in men when viewing pictures of erotic couples (Sabatinelli, Flaisch, Bradley, Fitzsimmons, & Lang, 2004) and more pronounced female amygdala reactivity to negative stimuli in contrast to greater male reactivity to positive ones (Stevens & Hamman, 2012), although the latter finding is not always confirmed (Sabatinelli et al., 2004). Additionally, there are indications that females experience higher event related potential amplitudes while viewing aversive and highly arousing stimuli than men (Li, Yuan, & Lin, 2008; Lithari et al., 2010). Results for self-report measures of emotional experience are somewhat more unambiguous, with females rating aversive emotional stimuli more negatively and/or arousing than males and males showing higher reactivity to stimuli depicting erotica (Bradley, Codispoti, Sabatinelli, & Lang, 2001b; Eisenberg & Lennon, 1983; Marchewka, Zurawski, Jednoróg, & Grabowska, 2014; Poláčková Šolcová & Lačev, 2017). Females also achieve higher scores in self-report measures of empathy (Stuijfzand et al., 2016), which primarily pertains to its affective component (Christov-Moore et al., 2014; Mestre, Samper, Frias-Navarro, & Tur-Porcar, 2009; Toussaint & Webb, 2005).

Current research

The aim of this study was to investigate gender differences and the role of empathy in affective processing. To this end, both the categorical model of emotions, based on six discrete "basic" emotions (Ekman, 1992; Ekman & Friesen, 2003) and dimensional model, according to which emotions are organised along two dimensions of valence and arousal (Bradley, Codispoti, Cuthbert, & Lang, 2001a) are employed in this study. Hypotheses are as follows:

Hypothesis 1: Due to clearer signals conveyed by happiness and surprise and their better visual distinctiveness, recognition of these emotions will be more accurate and faster than recognition of other emotions.

Hypothesis 2. Females will be more accurate and faster in overall emotion recognition than males. Because of the mixed results in previous works, additional hypotheses regarding recognition of individual emotions were not set, although larger female advantage could be expected regarding negative than positive emotions. Moreover, if the response latency measures to specific emotions are more sensitive than accuracy, response latency should result in larger gender differences than accuracy measures.

Hypothesis 3. In line with theoretical predictions and body of research showing greater female reactivity to negative emotional stimuli, it was hypothesised that females will give higher ratings of valence and arousal to negative emotional stimuli compared to males, who will, in turn, give higher ratings of valence and arousal to positive stimuli depicting erotica.

Hypothesis 4. Because of their greater emotionality and higher affective empathy, females are expected to have higher results on scales of affective empathy than males.

Given the above-mentioned gender differences in empathy and affective processing, we considered it necessary to investigate whether gender moderates relationships between empathy and affective processing. However, due to the limited scope of this paper, we opted to investigate whether gender moderates relationships only between empathy and emotion recognition accuracy, and empathy and reactivity to emotional stimuli. We approached these research problems as exploratory, without *a priori* hypotheses.

Method

Participants

The study was conducted on a convenience sample of 144 adults (43.1% male, 19-33 age old, M_{age} = 22.18, SD_{age} = 2.26). The majority of participants were students recruited during their regular classes.

Procedure

Participants completed an online empathy questionnaire and participated in emotion recognition and affective picture rating tasks which were presented to them individually on a tablet. For the stimuli presentation and data collection (recognition accuracy, affective picture rating tasks, and response latency), ID Insights – a biometric insight platform developed by ID Guardian (http://id-guardian.co/faqs/) was used.

In the emotion recognition task, participants had to recognize and correctly label the emotional expression displayed on the face presented on the screen by choosing among six "basic" emotion labels (anger, disgust, happiness, fear, sadness, surprise). Each photograph was preceded by a fixation cross in duration of 500 ms. In order to increase the overall difficulty of the emotion-labelling task and minimize ceiling effects and thereby provide a better estimate of individual differences in expression labelling ability, the presentation time for each face was 400 ms (Palermo, O'Connor, Davis, Irons, & McKone, 2013; Palermo et al., 2018).

For the picture rating task, participants had to assess valence and arousal of emotionally positive, negative and neutral pictures presented on the screen and to select which of the six basic emotions each picture induced in them (additional options were "something else" and "none"). Each picture remained on the screen for 5 s, preceded by a fixation cross presented for 500 ms.

In both tasks, stimuli were presented sequentially in the same order for each participant and were preceded by three practice trials. In addition, participants' response latency to stimuli were recorded in both tasks. Although the duration of stimulus presentation was restricted, the response latency was not, and it was measured for all responses regardless of recognition accuracy. The application for data collection was configured in a manner that allowed the participant to proceed to the next stimulus only if the previous one was responded to. Thus, there was no elimination of respondents based on their response latency (too slow/too quick) but only based on the task completion. Consequently, data from participants who provided answers to all stimuli were included in the study. Participants were not familiarized with the number of stimuli they will be presented with in those tasks. Participation in the study was voluntarily, collected data confidential, participants were (de)briefed about the study procedure, and they received a small gift of appreciation for participating in the research. All the aspects of the study were approved by the ethical board.

Instruments

Empathy. 36-item Affective and Cognitive Measure of Empathy (ACME; Vachon & Lynam, 2016) consists of three scales: Cognitive empathy (CE, as-

sessing the ability to detect and understand emotional displays), Affective resonance (AR, assessing empathic concern, sympathy, pity, and compassion) and Affective dissonance (AD, assessing contradictory emotional responses to other's emotions) and answers are given on a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*), with the total result calculated as a sum for each scale.

Emotion recognition task. For this task, a total of 48 *en face* photographs (24 male, 24 female) showing six basic emotions were selected from The Karolinska Directed Emotional Faces (KDEF; Lundqvist, Flykt, & Öhman, 1998). KDEF contains human facial expressions taken from 70 Caucasian amateur actors aged between 20 and 30 years and without distinct facial characteristics (e.g., no beards, moustaches, earrings or eyeglasses, and preferably no visible make-up during the photo-session). There are available norms for each face and expression regarding level of identification accuracy, errors, and reaction times (e.g., Calvo & Lundqvist, 2008).

Affective pictures. International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2008) was used for the selection of affective pictures. IAPS is a database which contains photographs depicting various emotional content that are normed according to their valence, arousal and dominance. For this study, a total of 35 pictures were selected and classified into three categories according to their valence (v) and arousal (a) norms: 12 negative ($M_v = 2.15$, $SD_v = 0.39$; $M_a = 6.29$, $SD_a = 1.50$), 11 neutral ($M_v = 5.11$, $SD_v = 0.56$; $M_a = 3.41$, $SD_a = 0.28$), and 12 positive ($M_v = 7.19$, $SD_v = 0.42$; $M_a = 6.63$, $SD_a = 0.60$). Participants had to assess these pictures on dimensions of valence (1 = *entirely negative*, 9 = *entirely positive*) and arousal (1 = *entirely calming*, 9 = *entirely exciting*).

Analysis

Gender differences in mean recognition accuracy and response latency to KDEF stimuli for emotions overall and for each emotion separately, and differences in valence and arousal ratings to IAPS stimuli categories and subcategories were analysed with a series of *t*-tests. To test whether there were significant differences in recognition accuracy and response latency for six "basic" emotions, and to test differences in valence and arousal ratings between the three IAPS categories, separate univariate ANOVA-s for dependent samples were conducted. Finally, to investigate whether relations of empathy to KDEF and IAPS differed across sex, a series of hierarchical regression analyses were conducted with gender and empathy subscales entered at Step 1 and product term carrying the interaction between gender and each empathy subscale at Step 2. Due to multiple analyses, the Bonferroni correction was used, and significance was set to $p = .007$.

Results

1. Reactions to KDEF stimuli

Average recognition accuracy of all basic emotions in this research was 79% and average response latency for emotion recognition was $M = 2470.90$ ms. For recognition accuracy, the results showed a significant effect of emotion type, $F(5,139) = 65.58$, $p<.001$). Pairwise comparisons showed that happiness was significantly better recognized in comparison to all other basic emotions, whereas fear was significantly worse recognized emotion compared to all others. There were no statistical differences in the accuracy of recognizing sadness, anger, surprise and disgust. There was also an effect of emotion type on recognition response latency ($F(5,139) = 45.16$, $p<.001$), with pairwise comparisons indicating happiness was significantly faster and fear significantly slower recognized than other emotions. There were no differences in response latency while recognizing sadness, anger, surprise and disgust. Interestingly, there was no overall relationship between recognition accuracy and response latency for different emotions, but at the level of specific emotions (except fear), more accurate respondents were also faster in recognizing emotions (sadness $r(142) = -.48$, $p<.001$; happiness $r(142) = -.44$, $p<.001$; anger $r(142) = -.34$, $p<.001$; disgust $r(142) = -.22$, $p<.001$; surprise $r(142) = -.20$, $p<.05$). At the level of specific emotions, more accurate males were also faster in recognizing sadness ($r(60) = -.43$, $p<.001$), happiness ($r(60) = -.38$, $p<.001$) and anger ($r(60) = -.25$, $p<.05$), and more accurate females were faster in recognizing sadness ($r(80) = -.56$, $p<.001$), happiness ($r(80) = -.48$, $p<.001$), anger ($r(80) = -.31$, $p<.001$) and disgust ($r(80) = -.30$, $p<.001$).

Females were significantly more accurate than males in recognising happiness, anger and disgust from human faces, as well as in overall mean recognition accuracy, and females had significantly shorter response latency in overall recognition of emotions, as well as faster recognition of specific emotions except fear (Table 1).

2. Reactions to IAPS stimuli

Before analysing gender differences in arousal and valence ratings induced by emotionally loaded photographs, preliminary analysis was conducted on the whole sample in order to check for the validity of the chosen stimuli. Firstly, to determine whether IAPS pictures induced in participants emotions appropriate for the category they were classified into, average frequencies of the six basic emotions participants experienced were calculated for each picture. To conduct a more precise, fine-grained analysis of IAPS picture categories, they were clas-

Table 1. *Reactions to KDEF stimuli – emotion recognition accuracy and response latency (N = 144)*

	Accuracy							Response latency (ms)						
	Males		Females		Total			Males		Females		Total		
Emotions	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*-test	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*-test
Happiness	.89	.11	.93	.10	.91	.10	2.01*	2049.14	899.74	1635.28	515.12	1813.47	733.42	3.24**
Anger	.80	.15	.87	.13	.84	.14	3.32**	2654.48	876.26	2159.46	626.90	2372.59	781.44	3.78**
Sadness	.83	.19	.85	.15	.84	.17	0.91	2753.31	1140.77	2238.62	801.25	2460.22	992.06	3.03**
Disgust	.77	.22	.84	.18	.81	.20	2.07*	2695.81	1069.14	2312.27	946.03	2477.41	1015.31	2.24*
Surprise	.79	.16	.84	.14	.80	.15	1.02	3030.59	1357.55	2290.07	768.83	2608.90	1120.87	3.85**
Fear	.57	.21	.52	.23	.54	.22	1.24	3234.59	1315.18	2985.65	1052.04	3092.83	1174.76	1.26
Total	.77	.09	.80	.08	.79	.09	2.15*	2736.32	903.01	2270.22	581.16	2470.90	721.12	3.86**

Table 2. *Reactions to IAPS stimuli – valence and arousal (N = 144)*

		Valence							Arousal						
		Males		Females		Total			Males		Females		Total		
Category	Subcategory	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*-test	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*-test
Negative	Mutilation	1.54	0.86	1.28	0.59	1.39	0.73	2.05*	7.25	1.20	7.66	1.38	7.48	1.32	1.89
	Threat-self	2.62	1.23	1.98	1.04	2.26	1.17	3.25**	6.51	1.27	6.89	1.40	6.73	1.36	1.70
	Threat-others	2.10	1.00	1.60	0.73	1.81	0.89	3.37**	6.62	1.15	7.23	1.22	6.96	1.22	3.05**
	Total	2.08	0.91	1.62	0.70	1.82	0.82	3.37**	6.79	1.03	7.26	1.23	7.06	1.17	2.44**
Neutral		5.81	0.72	5.90	0.70	5.86	0.71	0.74	4.16	0.83	4.30	0.73	4.24	0.79	1.07
Positive	Erotic	7.58	1.02	7.48	1.13	7.52	1.08	0.52	6.52	1.30	6.11	1.26	6.28	1.29	1.91
	Sport	6.99	1.25	6.92	1.28	6.95	1.27	0.32	7.10	1.17	7.46	1.03	7.31	1.10	1.94
	Total	7.28	0.96	7.20	1.00	7.24	0.98	0.49	6.81	1.08	6.78	0.89	6.80	0.97	0.17

*$p < .05$, **$p < .01$.

sified into subcategories according to the content they depicted. Negative pictures were classified into pictures showing mutilation, threat to self, and threat to others, while positive ones were classified into sports and erotica. Then we investigated what emotions the specific subcategories of pictures evoked. Regarding positive photographs, participants mostly indicated they felt happiness (49.4%). The dominant emotion among participants was happiness for both positive erotic images (63.3%), and for positive sports' images (39.5%). With regard to negative photographs, participants mostly indicated they felt fear (28.2%), disgust (22.3%) and anger (20.1%). The dominant emotion for negative images depicting threat toward others were anger (35.3%) and fear (27.1%), for those depicting threat toward self was fear (43.6%), and for those depicting mutilation was disgust (63.7%). Regarding neutral photographs, participants mostly indicated they felt nothing (45.8%). These results indicate that affective pictures selected for this study induced appropriate emotions in participants and are similar to those obtained by Bradley et al. (2001a).

For the dimension of valence, results showed a significant effect of picture category ($F(2,142) = 960.59$, $p<.001$) with participants rating positive pictures most positively, followed by neutral pictures, while the negative ones were rated most negatively. There were significant differences in arousal ratings as well ($F(2,142) = 388.46$, $p<.001$), with negative pictures being the most arousing, followed by positive pictures, and the neutral ones were the least arousing. This pattern of results suggests a "boomerang" shaped affective space, in line with the one demonstrated in previous work (Lang et al., 2008).

For the valence ratings, there was also a significant effect of subcategory ($F(5,139) = 645.23$, $p<.001$) and all the differences between subcategories were significant. All negative subcategories were rated more negatively than neutral and positive pictures. With regard to negative subcategories, pictures depicting mutilation were most aversive, followed by threat to others, which was more aversive than threat to self. Both positive subcategories were rated more positively than neutral pictures, with sport being more positively rated than erotica. For the arousal ratings, subcategory comparison also indicated significant effect ($F(5,139) = 209.85$, $p<.001$). There were significant differences in arousal ratings between all pictures' subcategories except between pictures depicting mutilation and sport, which induced the highest arousal among participants (Table 2). Overall IAPS categories' valence and arousal ratings were moderately related, but for positive pictures that association was positive ($r(142) = .50$, $p<.001$), while for negative ($r(142) = -.46$, $p<.001$), and neutral pictures ($r(142) = -.44$, $p<.001$) it was negative. The same trend was observed at the level of IAPS subcategories' valence and arousal (mutilation $r_{v\text{-}a}(142) = -.38$, $p<.001$; threat to others $r_{v\text{-}a}(142) = -.41$, $p<.001$; threat to self $r_{v\text{-}a}(142) = -.56$,

$p<.001$; sport $r_{v\text{-}a}(142) = .37$, $p<.001$; erotica $r_{v\text{-}a}(142) = .45$, $p<.001$). Also, overall IAPS categories', as well as subcategories', valence and arousal ratings were related in male[1] and female subsamples separately.

Generally, females rated negative pictures more negatively than males, and those pictures induced higher arousal in females than males. Additionally, pictures depicting mutilation, threat to others, and threat to self were significantly more aversive to females compared to males, and pictures depicting threat to others induced significantly higher arousal in females compared to males (Table 2).

3. Empathy

Although females had higher results on all three empathy scales, gender differences only emerged for Affective dissonance and Affective resonance scales, with female participants obtaining higher results than their male counterparts (Table 3).

There was a pattern of a higher positive relationship between the two affective ACME scales ($r(144)_{AR,\ AD} = .68$, $p<.001$) and a moderate one between Affective dissonance and Cognitive empathy ($r(144)_{CE,\ AR} = .29$, $p<.001$), while Affective resonance was unrelated to Cognitive empathy ($r(144)_{CE,\ AD} = .12$, $p = .163$).

4. Gender and empathy role in affective processing

Hierarchical regression analyses showed that gender significantly predicted anger recognition, cognitive empathy positively predicted overall emotion

Table 3. *Results on ACME scales*

		Males (n = 62)		Females (n = 82)		Total		
Scale	α	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*-test
CE	.89	45.21	6.85	46.18	6.63	45.76	6.72	-0.86
AR	.84	48.08	6.92	51.44	5.16	49.99	6.19	-3.33***
AD	.86	47.29	7.90	52.39	5.39	50.19	7.03	-4.43***

CE – cognitive empathy, AR – affective resonance, AD – affective dissonance.
***$p < .001$.

1 There was no relationship between arousal and valence estimates in pictures depicting sport in male sample

Table 4. *Results of hierarchical regression analyses for emotion recognition*

	Emotion recognition (β)						
	Happiness	Sadness	Fear	Anger	Surprise	Disgust	Total
Gender	0.14	0.08	-0.14	0.25***	0.09	0.16	0.15
CE	0.10	0.00	0.10	0.13	0.15	0.22**	0.23**
AR	0.08	-0.18	-0.18	-0.18	-0.03	0.04	-0.16
AD	0.00	0.14	0.21	0.16	-0.02	-0.05	0.15
R^2	.05	.02	.04	.10	.03	.08	.08
F	1.72	0.03	1.36	3.79**	1.03	3.14*	3.19*
Gender	0.10	0.04	-0.14	0.24**	0.10	0.14	0.12
CE	0.29*	0.10	-0.14	0.10	0.37**	0.31*	0.28*
AR	-0.02	-0.30	-0.11	-0.11	-0.03	-0.04	-0.20
AD	0.15	0.33*	0.28	0.17	-0.19	0.06	0.27
Gender*CE	-0.25	-0.13	0.34**	0.05	-0.32*	-0.12	-0.07
Gender*AR	0.13	0.16	-0.11	-0.11	0.00	0.11	0.05
Gender*AD	-0.21	-0.28*	-0.13	-0.03	0.28*	-0.15	-0.17
ΔR^2	.04	.03	.07	.01	.08	.01	.01
F	1.93	1.59	3.29*	0.45	4.15**	0.62	0.80
R^2	.09	.06	.10	.11	.11	.10	.10
F	1.83	1.16	2.22*	2.33*	2.41*	2.05	2.16*

CE – cognitive empathy, AR – affective resonance, AD – affective dissonance.
Gender: 0 = male, 1 = female.
*$p < .05$, **$p < .01$, ***$p < .001$.

recognition accuracy and disgust recognition accuracy, while there was a significant interaction of gender and cognitive empathy in prediction of fear and surprise recognition accuracy, with cognitive empathy being linked to better surprise recognition in males (Table 4). Further analyses showed that cognitive empathy is a significant predictor of fear recognition only in females (β = .32, $t = 2.74$, $p = .007$).

Regarding IAPS, gender significantly predicted assessment of valence for all categories of negative pictures except mutilation, and arousal for pictures showing threat to others, while Affective resonance significantly predicted assessment of valence for all categories of negative pictures (Table 5).

Table 5. *Results of hierarchical regression analyses for IAPS*

	Picture categories (β)															
	Erotic		Sport		Positive total		Neutral		Mutilation		Threat – self		Threat – others		Negative total	
	A	V	A	V	A	V	A	V	A	V	A	V	A	V	A	V
Gender	-0.13	-0.09	0.15	-0.06	0.00	-0.09	0.15	0.15	0.12	-0.11	0.11	-0.18*	0.22*	-0.19*	0.17	-0.18*
CE	-0.06	0.03	-0.04	0.01	-0.06	0.02	0.07	0.07	-0.16	-0.02	0.18*	0.14	-0.13	0.07	-0.18*	0.08
AR	0.16	0.13	0.06	0.07	0.14	0.12	-0.08	-0.08	0.14	0.41***	0.13	-0.32**	0.13	-0.35**	0.15	0.40***
AD	-0.20	0.03	0.00	0.05	-0.13	0.05	-0.12	-0.12	0.02	0.11	0.02	-0.04	0.01	-0.01	0.02	0.01
R^2	.05	.03	.03	.01	.01	.30	.04	.05	.06	.15	.06	.18	.09	.17	.08	.21
F	1.67	0.97	1.04	0.41	0.43	0.90	1.40	1.71	2.20	6.13***	2.14	7.50***	3.29*	8.04***	3.04*	9.18***
Gender	-0.16	-0.08	0.16	-0.06	-0.01	-0.09	0.18	0.18	0.12	-0.09	1.10	-0.18*	0.22*	-0.19*	0.16	-0.18*
CE	0.15	0.03	-0.02	-0.11	0.09	-0.06	-0.02	-0.02	-0.19	-0.03	-0.06	0.14	-0.03	0.10	-0.10	0.09
AR	0.21	0.35*	0.17	0.16	0.24	0.29	-0.03	-0.03	0.26	-0.63***	0.23	-0.53***	0.16	-0.53***	0.24	-0.63***
AD	-0.20	-0.15	-0.16	0.04	-0.22	-0.06	-0.24	-0.24	-0.06	0.21	-0.05	0.11	-0.07	0.09	-0.07	0.14
Gender*CE	-0.27*	0.01	-0.03	0.18	-0.19	0.12	0.11	0.11	0.05	-0.01	-0.16	-0.02	-0.15	-0.06	-0.09	-0.03
Gender*AR	-0.07	-0.32*	-0.17	-0.13	-0.14	-0.26	-0.08	-0.08	-0.17	0.32*	-0.15	0.31*	-0.03	0.26	-0.14	0.33*
Gender*AD	0.01	0.25	0.22	-0.01	0.13	0.13	0.16	0.16	0.11	-0.13	0.12	-0.20	0.12	-0.13	0.13	-0.18
R^2	.04	.03	.02	.02	.03	.02	.02	.01	.01	.04	.02	.03	.02	.02	.01	.04
F	1.91	1.64	0.91	0.84	1.40	1.03	0.71	0.66	0.44	1.96	1.18	1.74	0.78	1.23	0.67	2.12
R^2	.08	.06	.05	.03	.04	.05	.05	.06	.07	.19	.08	.21	.10	.21	.09	.24
F	1.79	1.26	0.96	0.59	0.85	0.96	1.1	1.25	1.43	4.42***	1.73	5.94***	2.20*	5.15***	2.01	6.82***

CE – cognitive empathy, AR – affective resonance, AD – affective dissonance, A – arousal, V – valence, Gender: 0=male, 1=female.
*p < .05, ** p < .01, ***p < .001.

Discussion

The aim of this study was to investigate gender differences and the role of empathy in emotion recognition and affective picture rating tasks. The results corroborated that happiness was generally the fastest and most accurately recognized emotion, in line with previously obtained results (e.g., Gregorić et al., 2014; Leppänen & Hietanen, 2005; Montagne et al., 2005; Williams et al., 2009). Fear tended to be recognised the least accurately, which was reflected both in recognition speed and accuracy and is also in accordance with previous results (Calder et al., 2003; Smith & Schyns, 2009; Tracy & Robins, 2008). One potential explanation for the fact that happiness was the best recognised emotion is because happy facial expressions, particularly smiling, are encountered more often than other facial expressions in everyday life and serve numerous social functions, from signalling true happiness to masking other expressions (Ekman, 1992). This frequent exposure to expressions of happiness should result in greater experience when decoding them, which should consequently translate to higher accuracy and speed of recognition (Ohman, Lundqvist, & Esteves, 2001). Moreover, happiness is the only clearly defined positive emotion, while there are a number of different negative emotions, what makes it unlikely to be confused with one of the negative emotions. Namely, happy expressions are visually more distinctive and simpler than negative ones and are, thus, more recognizable than other facial expressions (see Adolphs, 2002). Regarding fear, and according to the perceptual-attentional limitation hypothesis (Chamberland, Roy-Charland, Perron, & Dickinson, 2016; Ekman, 1993; Roy-Charland, Perron, Beaudry, & Eady, 2014), it is possible that participants had difficulties distinguishing this emotion from surprise because of their visual similarity and shared muscle movements. The results of this study corroborate this assumption, since faces expressing fear were misinterpreted by most participants as depicting surprise, and *vice versa*.

With regard to differences in emotion recognition ability, a pattern emerged indicating female advantage in overall accuracy and speed of emotion recognition of all specific emotions except fear. Furthermore, when specific emotions were analysed, it was shown that female participants were more accurate in recognizing happiness, anger and disgust, and faster in recognizing all emotions except fear. This pattern of results replicates those obtained by some authors (Connolly, Lefevre, Young, & Lewis, 2019; Montagne et al., 2005; Thompson & Voyer, 2014). Various theoretical explanations were proposed for female emotion recognition advantage, but two are particularly relevant for the pattern of results obtained in this study. According to the "attachment promotion" hypothesis (Hampson, van Anders, & Mullin, 2006), in their roles as primary caregivers, females had to learn to respond quickly and accurately to emotions shown by their offspring to facilitate development of secure attachment in

them. This hypothesis could explain the female advantage in overall accuracy and speed of emotion recognition. Female superiority in recognition of anger and disgust could be explained by the "fitness threat hypothesis" (Hampson et al., 2006), which states that females should be especially sensitive to negative emotions that signal threat to their infants. This specific female advantage could very well have a neurobehavioural basis and reflect insular differences between the sexes. Namely, results from neuroimaging research (Rymarczyk, Żurawski, Jankowiak-Siuda, & Szatkowska, 2019) indicate greater activity in insula during processing these two emotions, compared to others. Moreover, meta-analytical evidence shows that there is a small female advantage in recognizing facially expressed emotions (Hall, Carter, & Horgan, 2000).

As predicted, females in this study had lower valence and higher arousal ratings for overall negative picture category compared to males, which could be an indicator of greater defensiveness to negative emotional stimuli in females. Additionally, females rated all negative picture subcategories more negatively, and reacted to pictures depicting threat to others with higher arousal. This pattern of female self-report responses to aversive emotional stimuli is a finding well established in previous research (e.g., Bradley et al., 2001b; Poláčková Šolcová & Lačev, 2017), although it is not presently entirely clear whether it reflects females' tendency to respond in a way that is socially and culturally expected of them, or females really experience higher negative emotionality when they encounter aversive stimuli. One plausible explanation might be that there is a complex interplay between these two mechanisms. More precisely, it could be hypothesised that evolutionary selection shaped female neural structures and behaviour to promote greater responsiveness to threat and at the same time gender roles emerged as a result of this process, further facilitating it. No differences between the sexes emerged on any other pictures' categories or subcategories. This was especially interesting for pictures depicting erotica, since it was predicted that males will react to them more positively than females. One possible explanation could be the fact that erotic pictures in this research were not explicit enough for differences in arousal between the sexes to emerge.

Furthermore, females had higher results on affective resonance and affective dissonance scales than males, while there were no gender differences in cognitive empathy, in accordance with previous findings (e.g., Christov-Moore et al., 2014; Mestre et al., 2009; Toussaint & Webb, 2005). There are different mechanisms underlying affective and cognitive empathy (Shamay-Tsoory et al., 2009), and some indications that females rely more on affective empathy and associated neural emotional regions when processing emotional stimuli and when experiencing emotions, while males tend to recruit a more cognitive and rational route (Derntl et al., 2010). Another explanation for females' higher scores on affective empathy scales is the possibility they conformed to social

norms and gender roles according to which females are expected to be nurturing, caring and willing to share other's emotions. More precisely, as was the case with IAPS measures, greater affective empathy in females could simply be an artefact of socially desirable responding. The question about whether subjective ratings of empathy and emotional experience reflects real neurobehavioural and/or physiological reactions to affective stimuli is the one commonly encountered by other authors in the field (e.g., Bradley et al., 2001a; Poláčková Šolcová & Lačev, 2017) and is not yet satisfactorily resolved.

Regarding the role of empathy in affective processing, results showed that cognitive empathy positively predicted overall emotion recognition accuracy and disgust recognition accuracy, which is in line with theoretical conceptualization of cognitive empathy as the ability to detect and understand emotional displays of others. Additionally, significant interaction effects of gender and cognitive empathy in prediction of fear and surprise recognition accuracy indicated that cognitive empathy was linked to better surprise recognition only in males, and better fear recognition only in females. Given that fear and surprise share muscle movements, are visually similar and that participants in this study confused these two emotions during their recognition, it seems that cognitive empathy compensates specific gender deficits in emotion recognition. Furthermore, affective resonance significantly predicted assessment of valence for all categories of negative pictures, which is not surprising given its conceptualization as empathic concern, sympathy, pity, and compassion (Vachon & Lynam, 2016) and the fact that it involves an emotional response in the observer that is congruent in valence to the target (Batson, 2009).

Although the results of this study are compelling, there are certain limitations that need to be acknowledged and that point to recommendations for future studies. Primarily, the study was conducted on a small student sample, and it would be good to replicate them using a larger sample. Moreover, there are some other variables (e.g., sensory modality, age and gender of actors and participant, measurement method, and stimulus presentation method) that could potentially moderate gender differences in emotion recognition (see Thompson & Voyer, 2014), which should be taken into consideration in further studies. Finally, to eliminate potential use of mental imagery, and to direct participants' toward responding automatically, future studies should restrict both the time of stimulus display and the response time (Tracy & Robins, 2008).

Conclusion

The results of this study corroborated gender differences in emotion recognition ability, with females being faster and more accurate in recognizing facial

emotional expressions and responding more negatively to negative pictures than males. Moreover, gender differences in relations of empathy and affective processing revealed interesting patterns in line with the evolutionary approach in this field.

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Bed sharing habits and sleep patterns in adult relationships

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Abstract

Background and Aims: Bed sharing affects sleep patterns. Previous studies indicated both positive and negative effects of couple's bed sharing on sleep quality, believed to depend also on some aspects of relationship quality. The aim of this study was to examine the differences in subjective sleep quality (SQ) and sleep patterns between adults who slept with their partners and those who slept alone. In addition, we wanted to examine the predictive value of a set of biopsychosocial factors including relationship quality for subjective SQ in adults living with their partners.

Method: Study was conducted with 449 participants (79% women), whose age range was 18-64 years (M = 32.4). Online questionnaire was applied comprising general questions, questions on sleep patterns, SQ and various aspects of the relationship status. Those in a relationship also answered the Relationship Assessment Scale. A total of 225 participants reported regularly sharing their bed with a partner and 176 reported sleeping alone.

Results: Significant differences were found between participants sleeping with and without a partner in several sleep characteristics. Participants who shared their bed with a partner had shorter sleep latency (p < .01), earlier

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bedtimes and wake-up times on workdays and weekends ($p < .001$), reported shorter naps on work days ($p < .001$), shorter sleep on weekends ($p < .001$) and generally needed less sleep ($p < .05$). Hierarchical regression analysis showed that in participants living with their partner psychosocial factors significantly explained 10% of subjective SQ variance ($p < .01$). Significant individual predictors were subjective health and relationship quality.

Conclusion: Psychosocial factors can affect sleep health. When discussing sleep problems with patients or clients it is important to address bed sharing habits and relationship satisfaction since they can have an important, but often neglected, role in modifying sleep patterns and sleep quality in adults.

Keywords: sleep patterns, sleep quality, relationship quality, relationship status

Introduction

Sleeping is a necessary, irreplaceable behaviour crucial for adequate daytime functioning of the individual. Healthy sleep behaviour is prospectively associated with greater overall well-being, greater life satisfaction, lower risk for development of psychiatric disorders and various adverse health conditions, as well as lower mortality risk (Åkerstedt et al., 2019; Cappuccio, D'Elia, Strazzullo, & Miller, 2010; Knutson, 2010; Košćec Bjelajac, Despot Lučanin, Lučanin, & Delale, 2019). Sleep behaviour and sleep conditions have changed throughout history in all age groups. Due to the advancement of technology, too many activities before sleep and exposure to artificial light in the evening, particularly from various screens, lead to longer sleep latencies and lower sleep quality in different populations (Green, Dagan, & Haim, 2018).

Some sleep patterns that can be observed in the context of healthy sleep behaviour and that are indicative of sleep quality are sleep duration, nap frequency and duration, estimation of sleep need and sleep latency. Recommended sleep duration varies with age and, throughout adulthood, these values range between 7 and 9 hours per night (Hirshkowitz et al., 2015). However, sleep duration differs between weeknights and weekends, being 7.5 hours on average during the workweek and 8.3 hours on average on weekends (Hale, 2005). In the working population, compensating for workday sleep loss with longer sleep duration on weekends might be a reasonable behaviour related to a lower mortality risk (Åkerstedt et al., 2019). Another way to compensate for inadequate night-time sleep duration is daytime napping, which has shown mild to moderate positive effects on sleep quality (Campbell, Murphy, & Stauble, 2005; Monk, Buysse, Carrier, Billy, & Rose, 2001). On the other hand, naps longer than 100 minutes are indicative of sleep problems (Ohayon et al., 2017). Closely related to sleep duration is the perceived need for sleep, an estimated amount of sleep experienced as necessary for feeling well the following day.

Greater differences between actual sleep duration and ideal sleep duration could be a sign of poor sleep hygiene (Kalak, Brand, Beck, Holsboer-Trachsler, & Wollmer, 2015). And finally, sleep latency (i.e., time needed to fall asleep) ranging from 16 to 30 minutes is considered normal, while those longer than 45 minutes in adults or 60 minutes in older adults indicate poor sleep quality (Ohayon et al., 2017).

Various biopsychosocial factors affect sleep characteristics. Duration and internal architecture of sleep change in a relatively predictable manner over the lifespan. The longest sleep duration is observed early in life and the shortest in older age (Hirskowitz et al., 2015), which is associated also with lighter sleep and more daytime napping (Košćec Bjelajac, Holzinger, Despot Lučanin, Delale, & Lučanin, 2020; Young, 2004). Throughout adolescence, a progressive delay in sleep timing is observed and the differences between sleep duration and timing on school nights and weekend nights increases (Košćec Bjelajac, Bakotić, & Ross, 2020). Gender differences have been documented in perceived sleep need, sleep timing and sleep quality, with women reporting generally more pronounced morning preferences (Adan, Archer, Hidalgo, Di Milia, Natale, & Randler, 2012), longer ideal sleep need (Tonetti, Fabbri, & Natale, 2008) and experiencing more impaired sleep quality (Mallampalli & Carter, 2014). One of the important factors affecting sleep duration and quality in adults refers to the organization of working hours, especially non-standard working arrangements such are shift work, nightwork, long hours, on-call work or weekend work (Costa, 2016).

Recently, partnerships have been increasingly studied as a social construct associated with sleep patterns and sleep quality. Sleeping with a partner has been shown to modify one's sleep patterns, but both beneficial and adverse effects of sharing a bed with a partner have been reported (Diamond, Hicks, & Otter-Henderson, 2008; Dittami et al., 2007). Psychosocial effects of partnership on sleep have been studied through variables indicative of relationship quality such as frequency of conflicts, relationship duration, and relationship satisfaction. Perception of relationship satisfaction depends on the ratio between the gains and losses in the relationship, and also on the degree to which the current relationship meets one's general expectations about the relationship and about the partner (Šunjić & Penezić, 2014). Troxel, Robles, Hall and Buysse (2007) emphasized several reasons why it was important to study the association between sleep patterns and relationship (or marital) quality. First, according to the US National Sleep Foundation (2005), 61% of adults sleep with a partner, and 25-33% of married or cohabitating adults report that their intimate relationships are adversely affected by their own or their spouse's sleep problems. Second, partners are a primary source of social control; they play a

prominent role in the diagnosis and adherence or compliance of treatment for sleep disorders. Third, life changes like parenthood or illness may challenge marital satisfaction and relationship quality through their influence on sleep quality.

Troxel et al. (2007) suggested the conceptual model for understanding the connection between sleep and relationship functioning through psychological, behavioural, chronobiological and physiological mechanisms. Psychological mechanisms are about reducing loneliness and negative emotions before going to bed, and thus allowing better sleep quality. As a behavioural mechanism, partners are very important for supporting and controlling healthy sleep habits, physical activity or sleep disorder treatment. The partner can also be a social Zeitgeber. Just like our circadian rhythm is activated by light, partner's habits and routines around bedtime and wake-up time can act as a time cue. There are several ways in which physiological mechanisms can affect the connection between sleep and romantic relationships. Marriage problems may contribute to dysregulation of the hypothalamic-adrenal-pituitary (HPA) axis, which may contribute to subsequent sleep disturbance and disorders (e.g., insomnia), and the reciprocal pathway is also probable. Also, relationship conflicts, hypervigilance or avoidance can cause longer sympathetic activation which can disrupt sleep initiation and/or maintenance.

Several studies have shown an association between dissatisfaction with the relationship and poor sleep quality in men and women. Hasler and Troxel (2010) showed that in men, poor sleep quality predicted more conflicts and more communication problems with their partner the following day, while in women difficult interactions and conflicts with a partner during the day predicted impaired sleep quality at night. In addition to relationship quality, family problems and family support are associated with more or less sleep problems respectively (Ailshire & Burgard, 2012). Cohabitation compared to a single life can have more beneficial effects on sleep quality with respect to shorter sleep latency, greater sleep efficiency and less daytime fatigue (Troxel et al., 2007; 2010). Furthermore, higher subjective sleep quality has been reported in participants sleeping with a partner compared to those sleeping alone (Spiegelhalder et al., 2017). However, the duration of a relationship or marriage has not shown to be related to differences in sleep duration between husband and wife, and the partners' sleep duration has not been shown to synchronize throughout the course of the relationship or marriage (Hida et al., 2012).

There has been a recent rise in interest in sleep research in the context of living with a partner and sharing a bed (Troxel et al., 2007), as an important environmental factor, as well as in the context of relationship satisfaction and relationship quality, as an important psychosocial factor influencing various

aspects of sleep-wake behaviour of adults in the relationship. However, the studies in this field are still scarce and the results are inconclusive. The aim of the present study was to examine the differences in sleep patterns and subjective sleep quality between healthy adults who shared a bed with their partners and those who slept alone. In addition, we wanted to examine the predictive value of biological, sociodemographic and psychosocial factors for subjective sleep quality in adults living with their partners.

Methods

Participants

Data was collected from 449 participants (79% women) whose age ranged from 18 to 64 years (M = 39.4, SD = 11.37). Moreover, 206 participants were married, 46 cohabitated, 102 were in a relationship but not living together, and 95 were single, divorced or widowed. The participants in this sample were relatively highly educated with 46% having masters or doctoral degree, 29% having bachelor's degree, 29% completed high school education and 1% having completed only primary school education. Most participants were employed full or part time (65%), 30% were still students and 5% were unemployed.

There were 176 participants who reported sleeping alone (87 single, 81 in a relationship but not living together, 7 divorced, 1 widowed) and 225 who reported regularly sharing their bed with a partner (182 married, 43 living together). There were also 21 participants who reported being in a relationship, not living with a partner, but often sharing their bed, and 27 who reported being married or cohabitating but not sharing a bed.

Instruments

An online questionnaire was developed for the purpose of this study. It comprised sociodemographic and general questions, questions about sleep preferences and sleep patterns, and The Relationship Assessment Scale (Hendrick, 1988). Sociodemographic and general questions covered gender, age, relationship status (*In a relationship, but not living with a partner; In a relationship and living with a partner; Married; Single; Divorced; Widowed),* relationship duration, duration of cohabitation status, highest educational level obtained (*Primary school, Secondary school, Bachelor's degree, Master's degree, Doctoral degree*), employment status of the participant and his/her partner (*Student, Unemployed, Part-time employed, Full-time employed, Retired*), organisation of working hours of the participant and his/her partner (*Morning shift only,*

Afternoon shift only, Night shift only, Rotating shifts only), questions on room sharing and bed sharing, and subjective estimation of health on a scale from 1 - *"Very bad"* to 5 - *"Excellent"*.

Questionnaire about sleep habits in the previous month comprised 10 questions covering sleep patterns separately for weekdays and weekends (bedtime and wake-up time, from which sleep duration was calculated, and duration of napping), sleep quality (sleep latency, use of sleep aids or medication, subjective estimation of sleep quality and the estimation of sleep need. Subjective sleep quality was assessed with one question (*"Your sleep quality has generally been:"*) to which participants answered on a five-point Likert type scale (1 - *"Very bad"* to 5 - *"Excellent")*.

The Relationship Assessment Scale (Hendrick, 1988) was translated into Croatian by Šunjić and Penezić (2014). It comprises seven questions relating to several aspects of the relationship – how much a partner fulfils initial and general expectations, general relationship satisfaction, comparison with the relationship of others, the frequency of negative thoughts about the relationship, love in a relationship and the number of problems in a relationship. The participants rated each item on a 1-5 Likert-type scale estimating the degree of their agreement. The total score was determined as the average value of the estimates on all questions, with higher scores indicating greater satisfaction or a higher quality of relationship. Our study confirmed one-factor structure of the questionnaire and the internal consistency of the scale was $a = 0.90$.

Procedure

The study was approved by the Ethics Committee of the Faculty of Croatian Studies, University of Zagreb.[1] The participants were guaranteed anonymity and confidentiality of their individual data at the beginning of the questionnaire, and their participation was completely voluntary. Continuation of participation was considered as consent.

The online survey was distributed through social networks, email addresses and mailing lists using the snowball method. Since this was an online questionnaire, questions on various aspects of the relationship were conditioned on previous answers. The relationship quality rating scale was a part of the questionnaire only for those who were in a relationship or were married, irrespective of cohabitation status. All other participants rated their satisfaction with current relationship status instead.

1 This study was a major part of the graduation thesis of Karmen Gojsalić, mentored by Adrijana Košćec Bjelajac

Results

When we compared general characteristics of participants with respect to bed sharing, we found that the participants who shared a bed with a partner were on average older than those who reported sleeping alone ($M_{patrner}$ = 37.74, $SD_{partner}$ = 9.33 , M_{alone} = 25.25, SD_{alone} = 9.80, $t(447)$ = 13.77, $p < .001$), had higher educational status ($M_{patrner}$ = 3.61, $SD_{partner}$ = 1.07 , M_{alone} = 2.93, SD_{alone} = 0.95, $t(440.15)$ = 7.05, $p < .001$), and were mostly employed (X^2 = 130.07, df = 1, $p < .001$).

Multivariate ANOVA was performed to examine the differences in sleep patterns and subjective estimation of health between participants who shared a bed with their partner (N = 225) and those who slept alone (N = 176). The results showed a statistically significant difference in sleep characteristics and self-estimated health based on the bed sharing status (F (10, 388.00) = 14.291, $p < .001$; Wilk's Λ = 0.731, η^2_p = .27). The results of the between-subject effects' testing are presented in Table 1.

Participants who regularly shared a bed with their partner had earlier bedtime and wake-up time both on workdays and weekends, shorter nap dura-

Table 1. *Differences in sleep patterns and subjective estimation of health between participants sharing bed with a partner (N = 225) and those sleeping alone (N = 176)*

	Sleeping with a partner M (SE)[a]	Sleeping alone M (SE)[a]	F ratio[b]	p	η^2p
Workdays					
Bedtime	23:16 (01:04)	24:05 (01:17)	49.69	.001	.111
Wake-up time	06:46 (01:11)	07:44 (01:36)	49.03	.001	.110
Sleep duration	07:30 (01:04)	07:39 (01:22)	1.36	.244	.003
Nap duration	00:10 (00:23)	00:27 (00:55)	19.97	.001	.048
Weekends					
Bedtime	23:47 (01:14)	01:04 (01:29)	88.57	.001	.182
Wake-up time	08:05 (01:29)	09:49 (01:37)	123.13	.001	.237
Sleep duration	08:19 (01:12)	08:45 (01:14)	12.95	.001	.032
Nap duration	00:15 (00:54)	00:24 (00:50)	2.96	.086	.007
In general					
Sleep latency	00:15 (00:16)	00:21 (00:21)	8.13	.005	.020
Sleep need	07:35 (01:14)	07:52 (01:19)	4.90	.027	.012
Subjective sleep quality[c]	3.88 (0.81)	3.85 (0.73)	0.22	.637	.001
Subjective health[c]	4.23 (0.64)	4.28 (0.73)	0.65	.422	.002

[a] hh:mm; [b] df = 1, 397; [c] one item, response scale 1-5

Table 2. *Correlation table of variables entered in hierarchical regression analyses*

	Gender	Age	Education status	Partner's education status	Employment status	Partner's employment status	General health status	Cohabitation duration	Relationship duration	Relationship quality
Sleep quality	-.12*	-.02	-.04	.01	.07	-.02	.23**	-.01	-.02	.19**
Gender	–	-.07	-.07	-.22**	-.08	.16**	-.04	<.01	<.01	-.08
Age		–	.24**	.12*	.36**	.26**	-.23**	.84**	.81**	-.35**
Education status			–	.50**	.23**	.02	.05	.05	.05	-.11*
Partner's education status				–	.11*	.02	-.03	-.01	-.01	.01
Employment status					–	.20**	-.04	.23**	.20**	-.09
Partner's employment status						–	-.01	.24**	.19**	-.08
General health status							–	-.20**	-.17**	.22**
Cohabitation duration								–	.94**	-.34**
Relationship duration									–	-.33**

*$p < .05$, **$p < .01$; Gender: 1 – M, 2 - F

tion on workdays, and shorter sleep duration on weekends. They also reported shorter sleep latency and estimated sleep need shorter than participants who slept alone.

Hierarchical regression analysis was performed to examine the predictive value of a set of factors for subjective sleep quality in participants who were in a relationship and living with their partner, irrespective of their bed sharing habits ($N = 252$). The intercorrelations of variables examined in the analysis are presented in Table 2, and the results of the hierarchical regression analysis are presented in Table 3. We can see that when psychosocial variables were entered in the third step, the model significantly contributed to the explanation of variance in subjective sleep quality ($F(10,241) = 2.69$, $p = .004$). Within this model, the only significant individual predictors were self-perceived health and relationship quality, among which self-perceived health was a slightly better predictor of subjective sleep quality.

Table 3. *Summarized results of hierarchical regression analysis for variables predicting subjective sleep quality in participants living with a partner (N = 252)*

Predictors	β	R^2	ΔR^2
Step 1. Biological factor		.015	.015
Gender	-.121		
Age	-.027		
Step 2. Sociodemographic factor		.025	.010
Gender	-.115		
Age	-.045		
Education status	-.066		
Partner's education status	.010		
Employment status	.098		
Partner's Employment status	-.013		
Step 3. Psychosocial factor		.100	.076**
Gender	-.084		
Age	.036		
Education status	-.079		
Partner's education status	.019		
Employment status	.090		
Partner's Employment status	-.035		
General health status	.216**		
Cohabitation duration	.109		
Relationship duration	-.066		
Relationship quality	.164*		

*$p < .05$, **$p < .01$

Discussion

In this study we wanted to examine sleep patterns and sleep quality in adults who differed in their bed sharing habits – those who shared a bed with their partners regularly and those who slept in bed alone. We also wanted to examine which set of predictors would contribute most to subjective sleep quality in participants living with their partners, regardless of their bed sharing practices.

Our results showed that participants who slept with their partner reported significantly earlier wake-up times and bedtimes, both on workdays and weekends. This difference can be partly explained by differences in their working status. Namely, there were significantly more employed participants (either part time or full time) among those who slept with a partner, so the earlier bedtimes and wake-up times during the work week were expected. Also, participants

who shared a bed with their partner were significantly older than those who slept alone, which could have affected their sleep patterns in two additional ways. Firstly, an intrinsic biological shift towards later circadian phase (i.e., preference for later bedtimes and wake-up times) is expected to be completed by early twenties (Roenneberg et al., 2004). Therefore, the older group of those sharing a bed with their partner is theoretically expected to be shifted back to the earlier circadian phase preference, which can partly explain their earlier bedtimes in both social situations (weekdays and weekends). Secondly, among those who are married or living together, of average age around 38 years, parenting and associated obligations could normally be expected. This could also be the reason for their significantly shorter overall sleep duration on weekends. Our finding is partly in line with the results of Hale (2005) who found that people who slept alone slept significantly longer than those who were married (or the ones who slept with their partner) both on workdays and weekends. In our study, however, the difference in sleep duration on workdays between two groups was not found.

Participants sharing a bed with a partner also reported shorter sleep latency, shorter nap duration on workdays and estimated shorter sleep need in general. Troxel et al. (2007) emphasised that living with a partner could lead to shorter sleep duration, greater sleep efficiency, and less daytime tiredness. Although these differences may also be explained by lifestyle differences in the responsibilities and functioning of those in a relationship and singles, one explanation may be the psychological effect of partnership on sleep, as discussed by Troxel et al. (2007) in their conceptual model. Adults in a stable romantic relationship or marriage generally report less loneliness. Having company and spending time with a partner before going to bed can help them relieve the stress accumulated during the day and improve their sleep quality.

Our results showed that subjective sleep quality did not differ between those who shared a bed with a partner regularly and those who slept alone. But, it is important to emphasize that sleep quality is a complex multidimensional phenomenon which can be assessed in multiple ways. Sometimes it can refer to quantitative aspects like sleep latency, number of awakenings or total sleep duration, and other times it refers to more descriptive aspects like feeling refreshed or tired upon awakening, taking sleep aids or medications or to general subjective sleep quality estimation (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989; Ohayon et al., 2017). Despite all the differences in sleep patterns between the two groups, we can say that all the participants were healthy sleepers, and their different sleep patterns were probably caused by their different lifestyles and responsibilities.

As the second aim of our study, we wanted to examine the predictive value of biological, sociodemographic, and psychosocial factors for subjective sleep quality, irrespective of bed sharing practices. Biological variables age and gender did not explain a significant part of variance in subjective sleep quality, which was expected in a sample of relatively healthy working population within this age range (Hublin, Lehtovirta, Partinen, Kokenvuo, & Kaprio, 2018). Sociodemographic variables entered in the second step did not significantly contribute to the explanation of variance in subjective sleep quality either. Socioeconomic status and career challenges are known risk factors that can impair sleep quality and relationship quality alike (Troxel et al., 2007). However, participants in our sample were on average highly educated and most of them were employed, so the socioeconomic risks for impaired sleep quality were relatively low.

The last step of the regression analyses included psychosocial factors, which significantly contributed to the explanation of variance in subjective sleep quality. The last block of factors included self-rated health, relationship duration, cohabitation duration, and relationship quality, which together explained 10% of the variance in subjective sleep quality. The only significant individual predictors in our model were self-estimates of health and relationship quality. Previous studies have also found a similar relationship between self-estimates of health and subjective sleep quality in different populations (Duncan et al., 2014; Košćec Bjelajac et al., 2019). Both estimates are subjective, comprising a cognitive and affective component (positive or negative) reflecting one's general wellbeing. Good physical, mental and social health status is essential for good sleep quality. Sleep disturbances and disorders are associated with numerous cardiovascular diseases, diabetes, increased risk of obesity, heart attack, and longevity (Åkerstedt et al., 2019; Cappucio et al., 2010; Knutson, 2010). The individual contribution of relationship quality to prediction of subjective sleep quality found in our study adds to the knowledge on the relationship between these two constructs which is still relatively modest.

As previously discussed, there are several limitations to our study. There were significant differences in age and employment status between the group of participants sharing a bed with a partner and those sleeping alone, which could have affected the results. Also, there were more women than man in this study, and previous studies have shown gender differences in association between sleep and relationship quality. More male participants would add to the strength of our conclusions. Furthermore, we did not obtain information on either number or age of children or about other family members that might have needed constant care by our participants. Both could have affected their sleep patterns and relationship satisfaction. In future studies it would be necessary to have comparable groups with respect to relevant sociodemographic variables.

It would also be important to include more accurate measures of sleep patterns and sleep quality like actigraphy or standardized instruments (e.g., Pittsburgh Sleep Quality Index, Buysse et al., 1989). Inclusion of both partners in the study would further deepen the understanding of characteristics of sleep-wake behaviour in the romantic relationship.

Conclusion

Examination of sleep patterns in the healthy adult population showed that those sharing a bed with a partner regularly had different sleep patterns than those sleeping alone. Those who shared a bed with their partner had earlier bedtimes and wake-up times, napped shorter on workdays, had shorter sleep latency and shorter sleep duration on weekends and estimated to need less sleep in general. However, both groups were equally satisfied with their sleep quality.

A combination of different biological, sociodemographic and psychosocial factors significantly explained 10% of the variance in subjective sleep quality in married and unmarried partner relationship, irrespective of bed sharing habits. The crucial contribution was made by psychosocial factors where subjective estimation of better health and higher relationship quality significantly predicted better subjective sleep quality.

To conclude, psychosocial factors seem to affect sleep health. When discussing sleep problems with patients or clients it is important to ask about their bed sharing habits, relationship status and relationship satisfaction since they can have an important, but often neglected, role in modifying sleep patterns and sleep quality in adults.

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Framing prefactual affective posts about vegetable consumption

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Abstract

Aims of the study. Previous research has shown that message persuasiveness can depend on message framing. Through an experimental study, we investigated the effects of messages promoting vegetable consumption on recipients with different baseline intention to change their food choices. Persuasive messages were framed in terms of prefactual ("If… then") gain or non-loss. **Method.** A sample of young adult participants (N = 94) completed a questionnaire measuring their baseline intention to eat vegetables regularly. They were then presented with Facebook posts regarding the consequences of vegetable consumption. Posts were formulated as prefactuals and were focused either on the emotional positive outcomes that may be obtained through vegetable consumption (gain posts) or on the emotional negative outcomes that may be avoided through vegetable consumption (non-loss posts). After reading the posts, participants reported their attitude, anticipated regret and intention

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towards eating vegetables in the future. **Results**. According to their baseline intention to eat vegetables, participants were subdivided into three groups: *nonintenders*, *want-but-cannot and intenders*. *Want-but-cannot* participants (i.e., participants wanting to increase their vegetable consumption, but not feeling able to do so) reported more positive affective attitude, higher anticipated regret, and greater intention to eat vegetables after reading non-loss than gain posts. No differential effectiveness of gain and non-loss posts was found among *intenders* and *nonintenders*. **Conclusion.** Discussion focuses on the opportunity to vary the framing of persuasive messages on vegetable consumption according to receivers' baseline intention to change their eating behaviour.

Keywords: message framing, behaviour change, communication, intention, healthy eating behaviour

Introduction

Vegetable consumption is associated with improvement in both physical and emotional health (World Health Organization, 2018). However, message interventions promoting vegetable consumption have been only partially successful so far (see Appleton et al., 2016 for a review) and further research on how to frame those messages in order to enhance their effectiveness is needed. In the present study, we explored whether framing messages on vegetable intake in terms of expected emotional *gains* (e.g., "If you eat vegetables, you will feel more relaxed") or *non-losses* (e.g., "If you eat vegetables, you will reduce anxiety") would make them more or less persuasive for receivers with different baseline intentions regarding vegetable consumption. We presented messages as online content (Facebook posts), a novel but already widespread format used to deliver health promotion messages (Park et al., 2011; Thackeray et al., 2011).

Conceptual Framework

Message Framing to Increase Vegetable Consumption

Past research on communication aimed at increasing healthy eating has shown that the way messages are framed impacts their persuasiveness (e.g., Dijkstra et al., 2011; Godinho et al., 2017). Message framing pertains to the choice of specific words, images, or presentation styles to convey a certain statement or recommendation (Chang et al., 2015; Chong & Druckman, 2007). A message can be framed by emphasizing different pieces of information in a way that is likely to attract receivers' attention and change their attitudes, emotions, intentions, and ultimately behaviours.

According to the self-regulatory model of message framing (Cesario, Corker, & Jelinek, 2013), a message can be framed at multiple levels, by stressing different features of the proposed behaviour. At the most basic level, the *hedonic consequences* level, a message can be framed to describe either the *gain* of adopting a behaviour (e.g., 'Increasing your vegetable intake improves your health') or the *loss* deriving from not adopting it (e.g., 'Not increasing vegetable intake damages your health'). This level of framing, in which messages differ as to their positive or negative valence, has been extensively investigated in the domain of health promotion (Gallagher & Updegraff, 2012; Mitchell et al., 2015). Research, however, has often yielded mixed or inconclusive results, partly due to the different characteristics of the promoted behaviour. While messages promoting a detection behaviour seem to be more effective when they are framed in terms of loss, messages promoting a prevention behaviour seem to be more effective when they are framed in terms of gain (e.g., Rothman & Salovey, 1997; Rothman et al., 2006). As vegetable consumption is a preventive-related behaviour, gain messages might be particularly suited to promote it. Consistently, Godinho et al. (2017) found that gain-framed messages on fruit and vegetable consumption were perceived as being higher in quality than loss-framed messages.

According to the self-regulatory model of message framing (Cesario et al., 2013), at the *outcome sensitivities* level, messages focused on pleasant consequences can be further differentiated by making a distinction between messages describing an actual *gain* (e.g., 'High vegetable intake *improves your health*') and messages describing a *non-loss* (e.g., 'High vegetable intake *reduces your illness risk*'). So far, the gain vs non-loss distinction has been much less investigated than the gain vs loss distinction, and non-loss framing has sometimes been confused with negative framing altogether (see Bosone & Martinez, 2017 for a review). A notable exception is a study by Dijkstra and colleagues (2011; Study 1) who found that gain-framed messages were more effective than non-loss-framed messages in promoting fruit and vegetable intake. The Authors tested the effects of gain and non-loss messages focused on health outcomes and formulated as factual statements (i.e., describing a causal relation between vegetable consumption and health outcomes). It is still to be understood, however, whether the superiority of gain-framed over non-loss-framed messages can be generalised to other samples and types of messages.

In the present research, we tested the effectiveness of gain vs non-loss messages focusing our messages on the emotional rather than physical consequences of vegetable consumption. Besides, we decided to formulate our messages in prefactual terms (i.e., "If… then…") rather than factual terms, presenting hypothetical future outcomes as the consequence of hypothetical present behav-

iour. These two choices were rooted on previous research results highlighting the advantages of prefactual messages in the healthy eating domain (Bertolotti et al., 2016).

As regards the stress on emotional rather than physical health, previous research has shown that messages describing the consequences of eating behaviour on emotional health (e.g., 'Vegetable intake helps reduce the risk of depression') can be more effective than the more commonly used messages describing the consequences on physical health (e.g., 'Vegetable intake helps reduce the risk of cancer'; Carfora et al., 2016). This may be because consumer behaviour is often driven by the desire to realize psychological end-states of being (Gutman, 1982). In addition, these messages evoke future emotional states that are easily understandable and accessible to receivers, compared to more complex and distant medical notions (e.g., disease incidence and prevalence). Therefore, in the present study we decided to test whether the superiority of gain-framed messages over non-loss messages observed by Dijkstra et al. (2011) with messages on physical health would still hold with messages focused on emotional health.

As regards the choice of messages formulated in prefactual (i.e., "if… then") terms, past research has shown that anticipating the future consequences of a given diet in prefactual terms drives the intention to change eating behaviour significantly (Bertolotti et al., 2019), the more so when the anticipated consequences regard emotional well-being (Bertolotti et al., 2016). However, in previous research, prefactual messages were framed as losses and the eating behaviour focused on in the messages was meat consumption. Research on the effects of prefactual messages framed in terms of gain vs non-loss and focused on vegetable consumption is therefore missing so far.

The Moderating Role of Receivers' Intention

The relative effectiveness of gain and non-loss messages can be influenced by receivers' individual differences, for example differences in baseline intention to eat healthy. Previous research has widely shown that the effect of persuasive communication regarding eating behaviour largely depends on receivers' initial intention to enact the suggested behaviour (e.g., Conner & Norman, 2015; Mann et al., 2004). Several studies have examined initial intention both as a continuum variable and as a discrete variable composed of two or more stages, finding a discontinuity of prediction patterns as people move through stages (Sutton, 2000). The most applied distinction is the dichotomy between *nonintenders*, that is, individuals who are satisfied with their current behaviour, and *intenders*, that is, individuals who intend to change their eating behaviour (e.g., Lippke et al., 2009; Schwarzer, 2008). However, not all

individuals who intend to change their eating behaviour necessarily engage in plans on how to enact this intention. Consistently, both the Transtheoretical Model (Prochaska et al., 1993) and the Health Action Process Approach (Schwarzer 1992; 2001) consider the existence of intermediate categories between *intenders* and *nonintenders* (Brug et al., 1997; Ma et al., 2002). One of these intermediate categories is made up by individuals who are motivated to act but perceive that the obstacles they must face up are too high to be overcome. These individuals are highly motivated but feel they are not able to transform such motivation into a stable intention to change (Schwarzer & Luszczynska, 2007). To sum up, besides the traditional categories of *nonintenders* and *intenders*, a further intermediate category can be identified, the "*want-but-cannot*" category, including people who would like to change their behaviour, but feel they are not able to do so.

In the present research we decided to make a distinction among *nonintenders*, *intenders*, and *want-but-cannot* individuals regarding vegetable consumption, moving from the assumption that these three categories are characterized by different cognitions, perceived barriers, and readiness for change (e.g., Lippke et al., 2009; Schwarzer, 2008). Following previous research on how individual differences among receivers moderate the effects of message framing (e.g., Bertolotti et al., 2019; Henry et al., 2006; van't Riet et al., 2010), we expected to find differences in the degree to which *nonintenders*, *intenders*, and *want-but-cannot* would be persuaded by gain versus non-loss-framed messages describing the emotional health outcomes of vegetable consumption. We expected *intenders* to be especially motivated by gain messages, which highlight the prospective benefits of a behaviour they already would feel able to undertake. Conversely, we expected *want but cannot* participants to be especially motivated by non-loss-framed messages, which put a stress on the avoidance of potential risks of a behaviour they would not feel fully ready to undertake.

Objectives and hypothesis

In the present research, we tested the effectiveness of prefactual gain vs non-loss messages focused on the emotional health consequences of eating vegetables. We based our first hypothesis on the results of Dijkstra et al.'s study (2011), who found a superiority of gain- over non-loss-framed messages. Thus, we hypothesised that:

H1) Prefactual messages promoting vegetable consumption are more persuasive when they frame the effects of increased vegetable intake on emotional health in terms of gain (i.e., the benefits of increased vegetable intake) than

when they frame these effects in terms of non-loss (i.e., the risks avoided with increased vegetable intake).

As discussed above, the relative effectiveness of gain and non-loss messages can be influenced by receivers' individual differences, and in the present research we distinguished among *nonintenders*, *intenders*, and *want-but-cannot* individuals (e.g., Lippke et al., 2009; Schwarzer, 2008). Following the above-discussed research on how individual differences among receivers moderate the effects of message framing, we formulated the following hypothesis.

H2) Gain-framed messages are more persuasive than non-loss-framed messages among *intenders* (**H2a**), whereas non-loss-framed-messages are more persuasive than gain-framed messages among *want-but-cannot* participants (**H2b**).

We had no specific hypothesis regarding the effectiveness of gain-framed and non-loss-framed messages among *nonintenders*.

Method

Participants and Procedure

A convenience sample of participants ($N = 94$; 45 males, 49 females; *mean* age = 27.69, $SD = 12.17$) was invited to complete an online questionnaire. The exclusion criterion was following a specific diet. Then, participants were randomly assigned to two conditions (gain condition: $N = 47$; non-loss condition: $N = 47$) and received a link to access a private group on Facebook, where they were invited to accurately read a list of posts published on the group homepage. After reading all posts, participants were invited to complete a second questionnaire.

Measures and Procedures

Pre-manipulation Measures

At the beginning of the first questionnaire, participants reported their age and gender and read a definition of "regular vegetable intake" (USDA/USDHHS, 2010), that is, at least two servings of vegetables per day.

Baseline intention to eat vegetables. Participants' baseline intention to eat vegetables was assessed with the following question: "In the next month, do you intend to eat more vegetables? Please choose one of the following answers". Participants could choose among three answers: "No, I do not intend to do so" *(nonintenders)*, "I would like to do so, but I feel that it is impossible for me" *(want-but-cannot)*, and "Yes, I intend to do so" *(intenders)*.

Message Framing Manipulation

All participants were invited to access a private group on Facebook and read five posts (approximately 14 words each) describing the positive consequences on emotional health of eating at least two portions of vegetables a day. Participants in the gain condition read five online posts emphasising how eating vegetables is associated with positive emotional reactions, such as mood stability, relaxation, happiness, and tranquillity (e.g., "If you eat at least two portions of vegetables a day, you will feel more relaxed"). Participants in the non-loss condition read five online posts emphasising how eating vegetables is associated with preventing negative emotional reactions, such as mood swings, anxiety, sadness, and depression (e.g., "If you eat at least two portions of vegetables a day, you will reduce anxiety"). The content of all messages was based on scientific evidence (World Health Organization, 2018).

Post-manipulation Measures

The second questionnaire included the following measures (adapted from Carfora et al., 2016).

Attitude. Participants' attitude towards vegetable intake was measured with seven items using a 7-point semantic differential scale (e.g., "During the next month, eating at least two servings of vegetable is/would be…bad-good, harmful-helpful, boring-fun, unsatisfying-satisfying, etc."). Cronbach's α was 0.94.

Anticipated Regret. Participants were asked to state their agreement with 5 items measuring the regret they could feel in the future for not eating enough vegetables (e.g., "If I do not eat at least two servings of vegetable per day in the next month, this will bother me"). Answers were given on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Cronbach's α was 0.92.

Future Intention to Eat Vegetables. Participants were asked to indicate their intention to eat vegetables in the following month using three items (e.g., "During the next month, I intend to eat at least two servings of vegetables per day"). Answers were given on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Cronbach's α was 0.95.

Results

Preliminary Analysis

Overall, the items showed sensible variation and were not unduly skewed. To check if randomization was successful, we used a MANOVA with gain versus non-loss framing as the independent variable, and baseline intention and age as dependent variables. The results did not show any significant effect of condition in baseline intention ($p > 0.05$). A Chi-square test did not show any

significant differences in gender ($p > 0.05$) across conditions. Thus, the preliminary findings confirmed that the two conditions were matched on baseline variables.

On average, after reading the health posts receivers reported a high positive attitude towards eating vegetables, $M = 5.12$; $SD = 1.61$, an intermediate level of anticipated regret related to not following this nutritional recommendation, $M = 3.98$; $SD = 1.50$, and a high future intention to eat vegetables, $M = 4.92$; $SD = 1.87$.

Baseline intention

Using answers to the baseline intention items, we categorized 38 participants as *nonintenders*, 17 participants as *want-but-cannot*, and 39 participants as *intenders.* Table 1 shows the means and SDs of the study variables for participants at each level of baseline intention.

Main analysis

To test our predictions on the differential persuasiveness of gain or non-loss posts depending on receivers' baseline intention, we performed a 2 (message frame: gain, non-loss) × 3 (baseline intention: *nonintender, want-but-cannot, intender*) between-participants MANOVA on the three dependent variables (attitude, anticipated regret, future intention).

Results showed a strongly significant main effect of baseline intention, $F(6,162) = 7.96$; $p < 0.001$, $\eta_p^2 = 0.22$, and of the interaction between baseline intention and message frame, while message frame had no significant main effect. Post-hoc univariate tests showed that the effect of baseline intention was significant for all dependent variables, attitude, $F(2,87) = 7.43$; $p < 0.001$, η_p^2

Table 1. *Means and standard deviations (in parentheses) of the dependent variables as a function of baseline intention and message framing.*

	Baseline Intention					
	Nonintenders		'Want-but-cannot'		Intenders	
Message Framing	Gain	Non-Loss	Gain	Non-Loss	Gain	Non-Loss
1. Attitude	5.73 (1.45)	5.69 (1.45)	2.97 (0.50)	4.79 (0.93)	4.89 (2.06)	5.31 (0.99)
2. Anticipated Regret	4.89 (1.49)	4.03 (1.05)	1.83 (0.91)	3.53 (1.39)	4.12 (1.50)	3.94 (1.45)
3. Future Intention	5.71 (1.63)	6.06 (1.07)	1.44 0(.69)	3.21 (1.50)	5.27 (1.63)	4.87 (1.39)

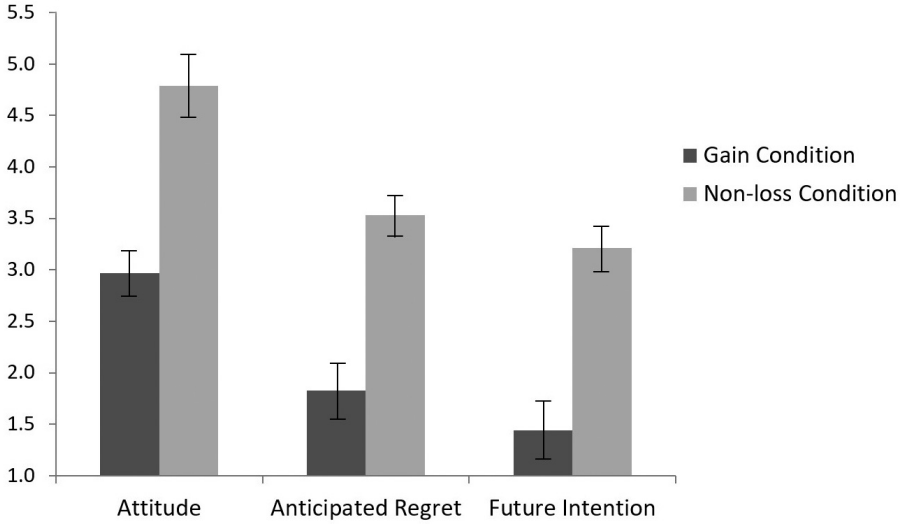

Figure 1. *The effects of message framing on attitudes, anticipated regret and future intention in the case of 'want-but-cannot' participants.*

= 0.15, anticipated regret, F(2,87) = 8.85; $p < 0.001$, $\eta_p^2 = 0.18$, and future intention, $F(2,87) = 31.22$; $p < 0.001$, $\eta_p^2 = 0.43$. In all cases, *want-but-cannot* participants were less convinced by the messages than *nonintenders* and *intenders*, who did not differ between each other.

Univariate tests also showed that the message frame × baseline intention interaction effect was significant for anticipated regret, $F(2,87) = 4.57$, $p < 0.01$, $\eta_p^2 = 0.10$, and future intention, $F(2,87) = 2.94$, $p < 0.05$, $\eta_p^2 = 0.07$, while it only approached significance for attitude, $F(2,87) = 2.13$, $p < 0.15$, $\eta_p^2 = 0.05$. Post-hoc *t*-tests with Bonferroni correction showed that *want-but-cannot* participants' attitudes towards vegetable consumption were more positive after reading non-loss posts, $M = 4.79$; $SD = 0.45$, than after reading gain posts, $M = 2.97$; $SD = 0.61$, $t(15) = 4.40$, $p < 0.001$. *Want-but-cannot* participants also reported higher anticipated regret after reading non-loss, $M = 3.53$, $SD = 0.41$, than gain posts, $M = 1.83$; $SD = 0.56$; $t(15) = 2.67$, $p < 0.01$, and higher future intention after reading non-loss, $M = 3.21$; $SD = 0.44$, than gain posts, $M = 1.44$; $SD = 0.59$; $t(15) = 2.72$, $p < 0.01$. No significant differences in attitudes, anticipated regret, and future intention were instead found among *intenders*, $t(39) < 0.79$, $p > 0.05$, and *nonintenders*, $t(32) < 1.93$, $p > 0.05$.

To sum up, as expected *want-but-cannot* participants were more convinced by non-loss messages than by gain messages. Exposure to non-loss messages

increased their positive attitude towards vegetable consumption, their anticipated regret for the negative outcomes of inadequate consumption of vegetables and an increased intention towards such consumption. Both gain and non-loss messages were instead persuasive with *intenders* and *nonintenders*, with no significant differences between these two categories of participants.

Discussion and Conclusion

Our results showed that nutritional communication framed in terms of gains or non losses deriving from increased vegetable consumption has differential effects depending on the receivers' baseline intention to change their eating behaviour. Differently from Dijkstra and colleagues' results (2011; Study 1), and in contrast with our first hypothesis (H1), we did not find a general preference for gain messages over non-loss messages. Both *intenders* and *nonintenders* were equally affected by gain and non-loss messages, and therefore we did not confirm our H2a regarding the higher preference of gain-framed messages among intenders. We did, however, find an important difference for a specific sub-group of participants, the *want-but-cannot*, who were more persuaded by non-loss posts than by gain posts. This was in support of our H2b hypothesis.

Our results are consistent with previous research suggesting that people perceiving difficulties in engaging in a specific behaviour can be persuaded by messages proposing the correct behaviour as an opportunity to avoid health risk (Schwarzer, 2008). For the first time, the present study has extended these results to the area of healthy food choice, showing that the sub-group of *want-but-cannot* receivers are more easily convinced by non-loss than by gain posts. In the case of the *want-but-cannot* receivers, the greater effects of non-loss posts were observed on attitude, anticipated regret and future intention to eat vegetables, which are the main factors in determining healthy eating behaviour (Godin, et al. 2010). Thus, in this sub-group of participants the non-loss posts stimulated a greater change in the main psychological domains related to eating behaviour, that is cognition, emotion and planning. The positive effects on anticipated regret for not eating vegetables regularly is particularly important, given that this emotion plays an important role in changing health behaviour (Brewer, 2016; Carfora et al., 2018), including eating vegetables (Carfora et al., 2016).

Our study has some potential limitations that future studies might usefully address. First, our results are to be interpreted cautiously, due to the small sample size that cannot be seen as representative of the general population. Second, as we did not have a control condition in which participants did not receive any message or read a neutral message, we were able to assess only the *relative* effectiveness of the two types of messages. Third, although the mes-

sage frame × baseline intention was statistically significant, the effect size was small. Therefore, future research should further test the practical and theoretical implication of the present study.

The results of the present research offer new insights that future research could further explore. An in-depth investigation of other receivers' individual characteristics that might influence the effectiveness of non-loss messages is certainly desirable (van Dijk et al., 2012). An individual difference variable that could be usefully considered is receivers' temporal orientation (Kees et al., 2010), that is, the tendency to focus on the past, present or future. We might hypothesize that future-oriented individuals would be more sensitive to non-loss posts, given their greater tendency to act in the present in order to avoid long-term negative consequences. Another possible relevant variable may be receivers' utilitarian vs. hedonic motivation (Lombardi et al., 2017), that is, the predisposition to engage in a behaviour for rational necessity or fun. In this case, we might expect that hedonists are more sensitive to gain rather than non-loss posts on emotional consequences. Finally, future studies could test whether non-loss affective messages fit well with *want-but-cannot* receivers also in the case of other nutritional or health recommendations, such as low red meat intake or daily physical activity.

Our results also have practical implications. They suggest that online posts about nutrition delivered on social networks can be framed in a way that fits the receivers' baseline intention. More technological innovation and public policy efforts should be devoted to engaging receivers in healthy habits by framing messages that accurately fit with their characteristics. To send such tailored messages to the right audience via social networks, public authorities could create chatbots able to automatically select and send different messages to different receivers.

In conclusion, our results confirmed the promising results of combining different message frames with further individual characteristics. Future studies may deepen this fit between receivers and message framing to produce a detailed classification of what frames are more persuasive for different types of receivers. A process which is much needed to increase the persuasive effectiveness of communication aimed at modifying eating behaviour.

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Review

Brain and Mind: Promoting Individual and Community Well-Being
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Art therapy as a multidimensional and complementary therapy in persons with brain damage

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Abstract

Background and Aims: Brain damage is related to the deterioration or destruction of brain cells caused by different types of traumas, illness or injuries and can negatively affect different perceptive, motor and/or psychosocial functions. For that reason, therapy and rehabilitation of persons with brain damage requires multidimensional and interdisciplinary approaches. In this context, the use of art-therapy, as part of expressive arts-therapies, may also be considered. Art-therapy, through the use of various art techniques (such as drawing, painting, modelling, collage, printmaking, computer art-techniques, etc.) promotes kinaesthetic and sensory functions, fine and gross motor skills, as well as imagination and symbolic processing. Also, during the therapy pro-

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cess there is the possibility of using assistive technology that allows persons with different limitations to use various tools and materials in their creative expression.

Method: In this regard, the aim of this paper is to review some of the results from previous research, to provide insight into appropriate models of intervention and to propose guidelines for the future use of art-therapy in this problem area.

Results: Review of recent results points out that art-therapy can be explained as a stepwise sustainment of sensorimotor, psychosocial and behavioural interactions in persons with brain damage. However, its efficiency should be further explored in order to provide a solid evidence-based rationale for its use as well as to develop new instruments for qualitative and quantitative evaluation of different parameters.

Conclusion: Also, more interdisciplinary research is needed, aiming to develop integrative and holistic therapeutic approaches that are focused on improving the well-being and quality of life in persons with brain damage.

Keywords: brain damage, art-therapy, holistic approach, quality of life

Introduction

The use of sounds, rhythm, voices, movements, words, colours, lines, shapes etc. represent the primary forms of human communication and mode of exploring ourselves and the world around us, on historical, cultural and ontological levels. Also, results of different studies confirm that the use of art-expressive media in therapeutic conditions may have positive effects on stimulating motor, emotional, cognitive and behavioural functioning in individuals. For these reasons, the use of expressive art-therapies has recently been increasingly considered as one of the complementary therapies in the context of holistic therapy and rehabilitation. Expressive art-therapies are both somatotherapy and psychotherapy approaches. In other words, attention can be focused on bodily functions, emotional experience, interpersonal relationships and overall elevation of self-esteem and self-realization (Barath, Matul & Sabljak, 1996, Malchiodi, 2012). According to the *International Expressive Arts Therapy Association* (IEATA), different therapeutic approaches can be considered in the following areas: art-therapy, music therapy, dance movement therapy, drama therapy/psychodrama and bibliotherapy. The selection of a single therapeutic approach, or a combination, depends on the therapeutic purpose, the client's preferences and motivation and the structure of the therapy session.

Art-therapy

Art-therapy is one of the most commonly used of the expressive art-therapies. Many authors emphasise the importance of an interdisciplinary approach

in using art-therapy because art-therapists must combine knowledge and skills from different areas such as visual art, art education, neuroscience, anthropology, psychology, etc. (Bucciarelli, 2016). Art-therapy is a form of therapy that combines different art techniques (such as drawing, painting, modelling, collage, printmaking, computer art-techniques, etc.) as a means of expression and communication. According to the *American Art Therapy Association* (AATA), art-therapy can be defined as *"… therapeutic use of art media, images, and the creative process respecting client responses to the created products as reflections of development, abilities, personality, interests, concerns, and conflicts…"* (Martinec & Pinjatela, 2017).

In that sense, it can be useful in the process of: a) coping with symptoms of traumatic experience, b) discovering ways of self-expression, c) supporting motivation, d) resolving emotional conflicts and d) developing social skills (Malchiodi, 2012). In essence, art-therapy enables the release of creativity that becomes a catalyst for change. Thus, in accordance with Ivanović, Barun and Jovanović, (2014), a human's basic thoughts and feelings that come from the unconscious and the preconscious find their expression in images much sooner than in words. This means that, sometimes, visual, rather than verbal expression, may lead to conflict resolution.

With this in mind, art-therapy could be defined as a psychotherapy technique that is focused on emotions, social interactions and motivation, but nevertheless, its impact on sensorimotor and neuromotor systems should not be neglected. Namely, manipulation with visual art materials and tools such as *pencils, pastels, crayons, chalk, clay, paper, papier-mâché, paintbrushes, canvas, scissors, specialized devices in digital/computer art*, etc., stimulate fine and gross motor skills through the use of different qualities and dynamics of hand movements. However, in the area of visual art expression, there is also the possibility of using the mouth or legs in persons with severe forms of hand dysfunction. Furthermore, combining different visual elements such as *lines, colours, shapes, spaces and textures* encourages sensorimotor communication whereby demands of the performance are reduced by emotional engagement and states of pleasure and satisfaction. And finally, visual art expression (but also the perception of work of visual art) in the therapy process is based at the level of playfulness, freedom, lack of rules and correct solutions. Such conditions facilitate the person to achieve their own ideas related to form and content that can certainly support self-realization and self-esteem. Within contemporary therapeutic models, such approaches can be significant, especially in vulnerable groups of patients with brain damage, developmental and other disabilities.

Brain Damage

Brain damage is related to the deterioration or destruction of brain cells caused by different types of traumas, illness or injures (e.g. physical trauma, poisoning, infections, tumours, neurological disorders, stroke, hypoxia, drug/alcohol abuse, etc.) that can lead to brain contusion, extracranial/intracranial bleeding, diffuse brain edema, disorders of cerebral circulation or to cellular, biochemical and molecular changes (Duboja, 2019, Watanable & Marino, 2016, Kos, 2016). Usually, the severity of brain damage is classified as mild, moderate or severe (Duboja, 2019), depending on symptoms that may occur in the following areas:

a) *cognitive* – attention, learning and memory disorders; executive function disorders (planning and decision making); speech and communication disorders; slowing down reaction time; disorder of reasoning and judgment
b) *behaviour/emotion* – delusions; hallucinations; mood disorders; irritability; agitation; aggression; confusion; impulsivity; social maladaptation
c) *motor* – paresis/plegia; muscle tone disorder; balance and coordination disorder; fine and gross motor skills disorder
d) *senses* – reduced vision, hearing, smell or touch sensations
e) *somatic* – headache; fatigue; sleep disorders; dizziness; chronic pain

Due to the complex consequences that can be caused by brain damage, a multidisciplinary approach in treatment and rehabilitation is necessary. This means that in addition to medical therapy (such as surgery, pharmacotherapy or treatment of concomitant health problems), other interventions like physical therapy, occupational therapy, speech therapy, psychotherapy, etc. should be included (Kos, 2016, Greenwood et al., 2016.). Furthermore, the idea of using complementary therapies has also been considered, since brain damage adversely affects not only the physical state but also the psychological, behavioural and spiritual. Thus, for example, Hernandez et al. (2016) described positive opportunities and challenges of using mantra, meditation and mindfulness in patients with traumatic brain damage. Alternatively, some authors point out physical, cognitive and psychological benefits of yoga (Silveira & Smart, 2019), animal assisted therapy (Stapleton, 2016), horticulture therapy (Wedel & Murrey, 2017), as well as aquatic physical activity, mindfulness-based stress reduction, computerized working-memory training, and blue-light therapy (Xu, Li, Wang & Cao, 2017). Art-therapy can also be considered as a complementary therapy in persons with brain damage because of its multidimensional focus within the therapy process. In this way, it is an example of a holistic approach in alleviating different symptoms caused by brain damage.

Art-therapy and Brain Damage

Spontaneous and non-binding communication that is supported during art-therapy session, according to Sell & Murrrey (2017), allows clients to develop divergent thinking which is less confrontational and more personal. Also, since artistic expression is based on non-verbal communication, it can allow the creation of primary relationships with the therapist or group members at an emotional and social level that is in line with the needs and capacity of the client. Similarly, Henan (2006) stressed that art-therapy, providing a safe place, can be useful in promoting mental health and well-being since it improves self-confidence and self-esteem.

Regarding specific outcomes achieved by using art-therapy, there are a certain number of studies that were carried out on persons with different types of brain damage. For example, Kim, Kim, Lee & Chun (2008) discussed the potential of using art-therapy in a stroke-patient twice a week over the course of ten weeks. Results from psychological tests, *Mini-Mental State Exam* and *Motor-Free Visual Perception Test-4*, applied before and after the therapy program, pointed out better scores in cognition, visual perception as well as motor activity and function. Likewise, Wilson (2001) has stated, in her research with stroke patients with communication disorders, that the creation of visual images can improve visual-motor functions. According to Michaels (2010), art-therapy can also be assumed as a non-verbal psychological therapy because it offers a '*space for linking*' shattered and meaningless experience, by mediating between mind and body, self and other, past and present. Having that in mind, in the frame of the *National Stroke Strategy* and *National Institute for Health and Clinical Excellence* (NICE), it is suggested that psychodynamic art-psychotherapy may be particularly appropriate for stroke survivors.

Art-therapy is also recommended for use in clinical practice for treating limitations caused by traumatic brain injury (Pratt, 2004, *Watanabe & Marino, 2014)*. David (2000) carried out neuropsychological evaluations after an art-therapy program and the results showed improvement in memory, concentration, organization and attention in patients with traumatic brain injury. Some authors pointed out the value of art-therapy in supporting brain plasticity and emphasised its ability to provide a safe, supportive and flexible environment (Kline, 2016). Jones, Walker, Masino Drass & Kaimal (2018) introduced mask-making and montage painting in a group of military service members with PTSP and traumatic brain injury at the *National Intrepid Center of Excellence* (NICoE) at the *Walter Reed National Military Medical Centre in Bethesda*. The results confirmed that this kind of approach supports identity integration, externalisation, and authentic self-expression and promotes group cohesion to facilitate processing grief, loss, and trauma. In addition, programme evaluated

the participants' experiences and perceived value of art-therapy and they rated art-therapy among the top five most helpful techniques at the NICoE.

Some studies have been focused on the effectiveness of art-therapy in dementia. One of those studies was conducted by Waller (2001) who compared two groups of intervention with patients with moderate-to-severe dementia. One group participated in a two-week art-therapy programme, and two control groups had two-weeks of social activities. The results indicated a significant reduction in depression, increased attention and better attendance in the art-therapy group with no change in the control groups. Similarly, Ehresman (2013) pointed out that the brain regions and mechanisms involved in creating visual art are not irreparably compromised in persons with Alzheimer's disease and that art-therapy can help persons to communicate with inner experience and to connect with others. Besides, creative activities stimulate several regions of the brain simultaneously, promoting the brain's plastic processes. Wald (1986) also emphasized that artwork can indicate the presence of psychosis or organic brain damage in the elderly, and that visual expression may be part of a structured activity with which the patients can cope and express themselves, even when language is largely lost.

Participating in an art-therapy program could also be helpful for children with cerebral palsy, evident in the results obtained by Wilk-Franczuk et al. (2010) which confirm its positive influence on speech intelligibility. An art-therapy programme was carried out for 16 weeks, 5 days a week and it was supervised by a speech therapist and a neuropsychologist. During therapy sessions, the art-therapist maintained dialogue related to naming objects, choice of tools and analysis of the finished work. Conversation among members of the group was also encouraged. The use of *Auditory Dysarthria Scale* showed highly significant improvements in overall intelligibility with significant improvement in volume, tempo, and control of pauses. The improvements in speech motor skills were paralleled by improvements in fine motor and perceptual skills involved in active artistic creation. In addition, there are possibilities of using art-therapy with other techniques. For example, Martinec, Dragić & Pinjatela (2018) carried out research by applying art visual expression along with guided imagery, psychophysical relaxation and Write Dance for the purpose of sustaining graphomotor and psycho-emotional dimensions as well as creativity and motivation in a child with cerebral palsy. Final evaluation has shown statistically significant differences between initial and final assessment on the sub-test Visual-motor Coordination, Drawing Graphic and reproduction of upper-case letters.

Different results support the idea that the use of art-therapy simultaneously stimulates different mechanisms of functioning in persons, i.e., sensory,

motor, cognitive and emotional. Development of neuroscience and new techniques in brain imaging made it possible to gain insight into the neurological basis of this connection. In other words, contemporary technology has enabled the understanding of different functions and structures of the brain that are activated during art-therapy intervention. So, Lusebrink (2004) explained that visual feature recognition and spatial placement are processed by the ventral and dorsal branches of the visual information processing system. Furthermore, mood-state drawings echo the differences in the activation of different brain areas in emotional states which means that cognitive and symbolic aspects of memories can be explored through the activation of their sensory components. These insights formed the basis for developing *The Expressive Therapies Continuum* (ETC) that provides a theoretical model for art-based assessments and applications of media in art therapy (Lusebrink, 2010). It consists of three levels: Kinaesthetic/Sensory, Perceptual/Affective and Cognitive/Symbolic. These levels reflect different functions and structures in the brain that process visual and affective information. So, assessment of the formal elements in an artwork can help a therapist to determine how a client is processing information via the different levels of the ETC which can be helpful in treatment planning and in identifying a gradual transition from one level to another. It is assumed that these transitions reflect the different structures and functions of the cortex that are involved in processing visual and affective information. In addition, Talwar (2007) cited the results of neuropsychological research according to which the production of visual art involves both left and right hemispheres as well as integrating both verbal and non-verbal processes.

These findings have induced the development of neuropsychological art-therapy along with earlier attempts in which free-hand drawing, copying and constructions of three-dimensional designs were used as assessment tools in establishing the location and nature of brain-damage (Garner, 1996). Neuropsychological art-therapy consolidates brain anatomy, physiology, motor skills and processes of mind that involve attention, creativity, memory and perception. This is precisely described in the *theory of artistic visual expression*, which involves cerebral systems that process sensory information and are related to the different functions and structures of the brain (Chilton, 2013). The interaction between conscious and unconscious mental activities are supreme and represent an explicit and implicit dialogue within the psyche when a person creates art. Explicit information systems involve higher level cognition, while implicit information systems are concerned with the more archaic, sensory, and emotional centres in the brain. It means that visual expression in the context of the therapeutic relationship facilitates and represents an integration of

cognitive and emotional processes. Also, memories can be more easily explored when the sensory components in the brain have been activated (King, 2016). Furthermore, while creating, an artwork client observes their own thoughts and becomes aware of the sensorimotor, as well as kinaesthetic and proprioceptive experience. In that way, according to Lusebrink, Mārtinsone & Dzila-Šilova (2013), art-therapy intervention can be explained as a stepwise sustainment of sensorimotor, psychosocial and behavioural interaction in persons with different neurologically based illness.

Assistive technology in art-therapy

Development of various kinds of assistive technology allows persons with different limitations to use various tools and materials in their visual art expression (Evans, 2012, Martinec & Pinjatela, 2017). At the basic level, clients may use retrofitting handles on paintbrushes, easy grip art tools in limited dexterity, building up drawing tools for a wider grasp and adapted scissors for a unique contracture hand grip, etc. (Loesl, 2012). Furthermore, the growth of technology introduced digital media and sophisticated software applications within art-therapy. Here can be mention devices where a person can touch, paint, scribble, stamp, draw, explore colours on an iPad, touch screen tablet, or computer desktop with touchscreen (Coleman, 2014, Darke, 2017). More complex software is also available, like *Story Board That* or *The Art Therapy Draw!* app which enable persons to experiment with colour, shapes, numbers, symbols and pictures. Graphic design also opens up new possibilities in the application of art-therapy in persons with physical disabilities and other sensory impairments caused by brain damage. Besides, a computer-based art-therapy program provides various advantages like creating and re-creating, multiple reproductions and preserving artworks.

There are also many other possibilities such as the one described in a study conducted by Cummings, Miller, Christensen & Cherry (2008) where a person with degenerative neurological disease was able to communicate and paint with the help of a computer that tracked her eye movements. As stated by Weinberg (1985), computer art-therapy can increase patients' self-esteem and motivation and the author also observed that this approach helps brain damaged individuals and stroke patients to express their anger and frustration. Finally, the use of computer technology has many potentials, e.g., faster and easier translation of concepts into an image, multimedia capacity, possibility to realize more successful therapeutic relationships with younger clients, the potential to integrate other therapy approaches, etc. (Choe, 2014).

Some guidelines for applying art-therapy

It has already been confirmed that the brain is exceptionally adaptive and resilient. So, if convenient therapy approaches are used, tailored to the person's needs, recovery can be promising. Within these reflections, the role and challenges of art-therapy can be assumed (Garner, 1996). However, it is necessary that visual art materials and tools, as well as the therapy program protocol, are matched with the patient's capacities (Pratt, 2004).

The results of previous studies have shown that art-therapy in persons with brain damage may have a positive influence in many areas, such as:

- facilitate neuromotor and sensorimotor functions
- improve attention and concentration
- sustain memory
- induce emotional reactions and positive mood
- boost social skills
- improve self-management and self-esteem

Although research on art-therapy is deficient and with some limitations, individual and group art-therapy have nonetheless been found to be effective. In order to make this approach even more successful, further research is needed, as well as development of different practical models of art-therapy. Thus, for example, Kim et al. (2008) described a therapy program for people with a stroke that was focused on improving spatial perception, colour and shape recognition, size comparison, expression of emotion and socialization. Art-therapy program included drawing objects such as clocks, houses, trees, clouds, fruit and rainbows, as well as self-portraits or drawings family members. Other therapy tasks included drawing figures after viewing pictures of houses or portraits, finding hidden or different figures in drawing, drawing with three-point perspective and making objects out of clay (Kim et al., 2008). Alternatively, Talwar (2007) proposed *an Art-therapy Trauma Protocol* (ATTP) to address non-verbal core and somatic memory of traumatic experience using right and left brain methods based on *Eye Movement Desensitization and Reprocessing* (EMDR). In this method, a large sheet of Bristol board is taped on the wall or easel. The participant is allowed to walk back and forth between the painting and the paint jars. This kind of walking promotes proprioception and suspension which occurs each time when "*… a client makes the decision to move from verbal language to the visual, kinaesthetic and sensory language, brush to paint, paint to image, intended to activate dual processing of the left and right hemispheres of the brain.* " After that, the client is encouraged to express dominant association related to finished art-work and then to replace the negative verbal connotations with positive ones. Similarly, Herman (1992) offered

a model of trauma treatment that includes three stages: safety, remembrance and mourning, and reconnection, while Collie, Backos, Malchiodi & Spiegel (2006) extended this idea to relaxation, self-expression, externalisation, positive emotions and social connection.

Regardless of the model chosen, during the art-therapy session, the art-therapist needs to:

- consider a suitable selection of themes or therapy issues
- propose visual art materials and tools
- support the necessary level of motivation and combine other artistic media (*music, movement, story, poem, meditation, guided imagery, etc*.) with the purpose of stimulating affective experience and divergent thinking
- encourage verbal dialogue and the client's interpretation of personal experience
- select and suggest some kind of assistive technology

Conclusion

Art-therapy can be a powerful intervention in helping persons with brain damage with emotional expression, socialisation and emotional adaptation to mental and physical disabilities, and communication in a creative and non-threatening way. However, its efficiency should be further evaluated in order to provide a solid evidence-based rationale for its use. Likewise, care should be taken when defining the art-therapy protocol, taking into account the client's needs and limitations. According to Mirabella (2015), new instruments for qualitative and quantitative evaluation of different parameters must be further developed and validated. This means that research needs to include not only clinical scales and neuropsychological tests but also psychophysical tests and brain imaging techniques. Moreover, interdisciplinary research is needed, aiming to develop integrative and holistic therapeutic approaches that are focused on improving the well-being and quality of life in persons with brain damage.

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Professional paper

Brain and Mind: Promoting Individual and Community Well-Being
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Physical violence in family and therapeutic intervention of relation family therapy for increasing self-control

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Abstract

Self-control seems to be strongly associated with all forms of family violence, since abusers often use violent behaviour impulsively and regret their actions later. Self-control is identified as a capacity and the willpower to stop, override, or alter unwanted behaviour; in order to prevent violence, self-control is necessary to restrain aggressive impulses or, in the case of victim self-control, to protect oneself from future violence. Family members with a history of violence are often unable to restrain such impulses and the cycle of violence continues. Empirical evidence and therapeutic trials have shown that self-control in case of violence should be considered not just a deliberate action, but mostly automatic or implicit behaviour. To this end, a case study is presented, showing the therapeutic process. The participant in the presented research is the father in a family of four. The results identified five key thera-

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peutic interventions of Family Relational Therapy: (1) addressing the affective atmosphere, (2) addressing the repetition of the affective atmosphere, (3) reinforcing the affect, (4) addressing the basic affect and intrapsychic experience, and (5) compassion. The presented case emphasizes precisely the dimension of working with self-control with violent clients. In case of violence, self-control is based on dysregulated emotions and behaviour, and the person is unable to control the duration and intensity of emotions. With presented interventions, the violent client is able to change the perception of oneself and thus one's own emotions, understanding and behaviour. Addressing intrapsychic experience allows the client to understand current bodily responses through dual awareness that places the source of the violence in the past. Compassion in therapy comes from the client-therapist relationship that offers a different relationship experience, so the client can create a new way of implicit relational awareness. With new experiences, they are able to effectively use self-control when managing violence in present family settings.

Key words: physical violence, self-control, family, Relation Family Therapy

Introduction

Physical domestic violence

Physical violence in the family can be divided into (1) violence against children and (2) partner violence. Violence against children in the family is any act of the caregiver that endangers the health and well-being of the child and qualifies as physical violence, sexual violence, psychological violence or neglect of the child (Giardino, Lyn, & Giardino, 2019). In its report on violence against children, the United Nations Children's Fund provided the following definition of physical violence:

"Physical violence against children includes all corporal punishment and all other forms of torture, cruel, inhuman or degrading treatment or punishment as well as physical bullying and hazing by adults or by other children (UNICEF, 2014, p. 4)."

Physical punishment research indicates the prevalence of this form of domestic violence against children (duRivage et al., 2015; MacKenzie, Nicklas, Waldfogel, & Brooks-Gunn, 2012; Straus, 1994). The World Health Organization estimates that 23% of children are victims of physical violence (WHO, 2019a). A recent survey on the use of physical punishment in European countries found that 91.1% of parents sporadically hit, spank or slap a child when misbehaving, and that 8.9% of parents use this type of punishment frequently (duRivage et al., 2015). However, a survey on a representative sample of the American population showed that 57% of mothers and 40% of fathers physically punish (spank) three-year-old children and that 52% of mothers and 33%

of fathers physically punish (spank) five-year-old children (MacKenzie et al., 2012).

In addition to direct physical violence, children are victims of partner violence between their parents or guardians. Physical partner violence increases the risk to the health and well-being of children (Tscholl & Scribano, 2019), as exposure to violence affects their natural response to stress (Rothschild, 2000). According to the WHO, 30% of women worldwide are exposed to physical violence (WHO, 2019b). Physical violence between the parents witnessed by the child affects their experience of emotional security (Cummings & Davies, 2010). Because of their own emotional vulnerability, parents are unable to respond consistently to the emotional needs of the child and become emotionally numb and inaccessible to the child's emotions. Thus, children become victims of physical violence themselves or are neglected because parents do not meet their basic needs (Tscholl & Scribano, 2019).

Self-control and physical violence in the family

Self-control is the ability to stop inappropriate emotions and behaviour, which means giving up instant gratification (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001) in exchange for a later reward (Mischel, Shoda, & Peake, 1988). Effective self-control allows the regulation of painful affect without resorting to destructive behavioural responses (Schore, 1994). Some define self-control as a top-down process of self-regulation, which involves shifting of stimuli-directed behaviour into goal-directed behaviour and allows delaying immediate gratification for later reward (Baumeister et al., 2001), which is why self-control is often associated with the ability of perceiving and understanding (Nigg, 2017).

Domestic violence shapes specific emotional regulation (Kinniburgh, Blaustein, & Spinazzola, 2005) and a specific model of self-control (Finkenauer et al., 2015). Children exposed to domestic violence experience unmanageable stress. Because stress is caused by the very persons who should provide shelter and safety, children need to adapt their experiences to stay in this relationship (Galambos & Costigan, 2003; Hyoun, Pears, Capaldi, & Owen, 2009). Insecure attachment models are formed within the family (Ainsworth & Bell, 1970), which establish specific responses to stress and specific ways of seeking safety and reassurance in the child. Internal working models that the child forms with the mother (Bowlby, 1969) permanently shape the modes of physiological and emotional responses even in adulthood (Reite & Boccia, 1994). In this way, a specific way of emotion regulation continues in partnerships, thus maintaining the dynamics of domestic violence. Domestic violence and related stress diminish the capacity for self-control (Finkenauer et al., 2015) by disabling the

feelings of security and trust, which create the feelings of threat and thus activate uncontrollable defence mechanisms. Such individuals either defend themselves with violent behaviour, thus becoming perpetrators, or their only defence is freezing, so that they become the victims of violence (Rothschild, 2000). This closes the circle of violence, as a reduced sense of self-control enables domestic violence to emerge and continue (Finkenauer et al., 2015). Changing the mechanisms of self-control, however, enables an adult to not execute violence or become a victim of violence because they learn to hold, process and calm stressful emotions, and control their behaviour (Finkenauer et al., 2015).

Therapeutic treatment of violence

Relational Family Therapy (RTF) is an innovative therapeutic model for families and couples, combining three basic relational theories: interpersonal analysis, object relations theory and self-psychology (Gostečnik, 2017), the relationship being their fundamental concept. From the perspective of the RTF model, the client-therapist relationship can most deeply replicate the experience of the detached, denied, and hidden parts of the client's psychological experience (Schore, 2012; Siegel & Solomon, 2013; Stern et al., 2010), thereby giving the client an opportunity to name and assess those parts of experience that were unknown to them so far but have guided and affected their systemic and interpersonal interactions. The goal of therapeutic interventions in RTF is to relate the present to past experiences and, through raising awareness of the past, take control of the present ways of establishing relationships, which is achieved through changing one's perception (Gostečnik, 2017; Siegel & Solomon, 2013; Stern et al., 2010).

From the perspective of the Self-Control Strength Model of Family Violence (Finkenauer et al., 2015), increasing self-control is an important aspect of addressing violence in therapy. With the new experience of a secure relationship offered by the therapist through effective affect regulation (Stern et al., 2010), the client again experiences security and trust that enable them to better control their own emotions and behaviour, thereby stopping violent impulses or being able to abandon the role of the victim of violence.

Method

Below we present a case study showing the therapeutic treatment of physical violence in the family. The participants in the research were a woman (38 years), a man (40 years), a boy (11 years), and a girl (8 years), who were included in family therapeutic treatment according to the RFT method. An excerpt of

the therapeutic treatment of the father (male, 40 years old) will be presented. The treatment took place in couple therapy, in a part without children. The study covered two therapeutic cycles (each consisting of 12 therapy sessions) over a 7-month period. The family was included in therapy due to their son's behavioural disorders.

In the course of therapy, however, the main topic became the treatment of physical violence, and we will present the part of the research related to parental attitudes towards physical punishment in child-rearing. The presented intervention took place in the third session of the second cycle of therapy. To track the process of family therapy, we used a preliminary study using the task analysis method, and a pre-set map of the therapeutic process adapted to addressing parental distress was used as a starting point (Poljak Lukek, 2011, 2015). We used the following steps of therapeutic treatment: (1-t) addressing the affective atmosphere, (2-t) addressing the repetition of the affective atmosphere, (3-t) reinforcing the affect, (4-t) addressing the basic affect and intrapsychic experience, and (5-t) compassion; these steps allow the following process for the client: (1-c) defence, (2-c) verbalization of affect on systemic and interpersonal levels, (3-c) confrontation with affective atmosphere repetitions, (4-c) verbalization of intrapsychic experience, and (5-c) dual awareness; the steps end with a change in implicit relational awareness (Poljak Lukek, 2011). By defining the key moments in therapy, we answer the basic research question: What therapeutic interventions make it possible to effectively address domestic violence with the objective of ending violent behaviour?

The therapeutic meetings were transcribed, and we defined the key moments in therapy and followed therapeutic change. The coding was based on predefined categories. We present some examples from previous research (Poljak Lukek, 2011) for identifying codes of therapeutic interventions: (1-t) addressing the affective atmosphere: "Do you feel helpless and guilty when you can't set boundaries for your child in a way that you can stay calm?" or "Now you experience that you don't have support. You rightly expect people to understand you. At the same time, a whole range of emotions awakens and become uncontrollable."; (2-t) addressing the repetition of the affective atmosphere: "Do you recognize these feelings in other relationships, too?" or "Just as you have to understand your children and your husband, you have to understand me as well. When I speak, you withdraw more and more into your world and find fewer and fewer words for your feelings."; (3-t) reinforcing the affect: (Therapist feels redundant) "Do you feel that you don't belong in a relationship, that there is no space for you?" or "And the pain and distress comes back, you now do everything you can to avoid tension, and yet exactly what you are fighting against happens.", (4-t) addressing the basic affect and

intrapsychic experience: "What did you do as a child when you were angry?" or "That child was not guilty or have the power to influence the people around him and how they took care of him, even though he would do anything so that the parents could do it.", and (5-t) compassion: "There was no place for you as a child. Now, however, you can take this child who lives within you in your arms and say to him those words that you miss as a child. And when you say these words to your children, you will comfort yourself." or "Now you can see that all your feelings in the present are perfectly normal, only the origin is not in these present relationships."

Results

Excerpts from therapy sessions with the father, who was violent both to his spouse and children, are presented. During this phase of therapy, the client acknowledged his violent behaviour but still failed to effectively control and stop it.

1. Addressing of affective atmosphere (1-t) and client's defence (1-c)

   Mr. B: You (therapist) totally don't understand me...

   Therapist (Th.): You feel that I am being unfair to you. And it makes you angry when I try to convince you of something… (1-t)

   Mr. B: > silence < (1-c)

2. Addressing of the repetition of affective atmosphere (2-t) and client's verbalization of affect on systemic and interpersonal levels (2-c)

   Th.: Do you think I am exaggerating when it comes to punishing your children... and I'm not listening to you, just as your children don't listen... (2-t)

   Mr: Yeah, I don't even expect you to listen to me… Neither does my wife care about what I think… (2-c)

3. Strengthening the affect (3-t) and client's confrontation with affective atmosphere repetitions (3-c)

   Th.: It feels like it doesn't matter what you think and how you feel... and you would scream just to be clear about what you want... (3-t)

   Mr. B: Yeah, sometimes all the pressure goes to my head... (3-c)

   Th.: And it's awful when you want something, but you don't get it...

4. Addressing the basic affect and intrapsychic experience (4-t) and client's verbalization of intrapsychic experience (4-c)

   Th.: What did you have to endure as a child? All the wrongs... (4-t)

   Mr. B: In my childhood, only my father was being treated unfairly… He didn't care about me and my mom… And when he felt that injustice was happening to him, and that was many times, he just went crazy... (4-c)

   Th.: But the only one who wasn't understood there was you…

   Mr. B: I often didn't do anything then. I was just waiting for him to cool down... As a teenager, I talked back...

   Th.: And even then you were probably completely misunderstood and this anger just stayed with you...

   Mr. B: Now I really don't care…

5. Creating compassionate response (5-t) and dual awareness (5-c)

   Th.: Today, however, you understand that you are not being treated unfairly as a father... and that only you can control your anger towards your children. (5-t)

   Mr: The kids probably remind me of my childhood and I'm angry because they don't appreciate what they have. But they can't understand it, as I didn't understand it with my father... (5-c)

In the continuation of therapy, we repeatedly addressed the topics presented above. The repetition of presented affect regulation helped the client to stop his established responses of violence. At the end of the therapy cycle, the spouses reported the termination of violence both in their relationship and in child-rearing.

Discussion

The research provides an insight into the dynamics of self-control in the therapeutic treatment of physical violence in the family. Through dual awareness of their own experiences, emotions, and behaviour in the present, an adult can assume greater responsibility for their own behaviour and thus more functional self-control, which can effectively stop their violent impulses (Finkenauer et al., 2015). We must bear in mind, though, that the child is completely incapable of controlling domestic violence. As a result of experiencing violence, the child fully adjusts his or her self-regulation and self-control mechanisms to

remain loyal to family relationships that allow him or her to survive emotionally (van der Kolk, 2005). In contrast, the adult, regardless of past experience, is responsible for their behaviour in the present. And because three important brain centres (the amygdala, prefrontal cortex, and ventral striatum) are involved in the feeling of self-control (Casey, 2015), in addressing domestic violence in therapy it is important not only to cognitively understand one's behaviour, but also to influence the basic emotional experience that decisively impacts the ability to control impulses. The relational paradigm emphasizes precisely this dimension of self-control. By changing the perception in relationships, we can change the perception of oneself and thus one's own emotions, understanding and behaviour (Gostečnik, 2017; Schore, 2012; Stern et al., 2010). By understanding current bodily responses through dual awareness that places the source of self-regulation in the past, behaviour can be directed toward the desired goal or later reward (Baumeister et al., 2001), which can actually help people who become aware of their own violent behaviour to stop it.

In the presented case, the results indicate a possible course of therapy in the case of physical violence in the family. We can see that understanding the intrapsychic experience (in the original family) is crucial to understanding one's behaviour in the present. With a violent family member, addressing the affective atmosphere, which leads to a sense of losing control, has proven to be a key therapeutic intervention. Due to excessive distress caused by misunderstanding and the feeling of injustice, the client loses the ability of effective self-regulation. He feels injustice in relation to his children, which he can only fight by exercising violent physical dominance. Despite his understanding of the inappropriateness of violence, his excessive feelings of distress and injustice prevent his body from immediately calming down. Due to his past experience, he only achieves this kind of calm through physical activity. By understanding the origins of helplessness and injustice that stem from his relationship with his father, therapy allows for a different experience of his current relationships. Being aware of his own pain and the child's helplessness gives him a different perception of his current relationships and thus enables a quicker and more effective calming of distress. The experience of trust and security in the relationship offered by the therapist with a compassionate response allows for better self-control of emotion and behaviour.

In the client-therapist relationship that offers a different relationship experience, the client can create a new way of implicit relational awareness. It is based on affect and action rather than on words or symbols and is unconscious, but not repressed or denied (Stern et al. 2010, 145). It evolves according to the thinking, emotions and understanding of the therapist and the client, and according to what both parties in the relationship perceive that the other feels, thinks, and perceives (Stern et al. 2010, 13). RTF understands the basis of

therapeutic change not only as a change in cognitive perception but, above all, as a change in affective perception in a relationship (Gostečnik 2004, 41). The experience of a new relationship for the client allows the naming and assessment of the deep aspects of his experience and transferring that experience into marriage and other significant relationships in the family and elsewhere. In the case of violence, this research shows that the experience of safety and trust is crucial; through this experience, the violent family member can experience a new awareness of his own stress and improved self-control capacity.

Conclusion

By defining the key moments of change in RFT, we identify the therapeutic interventions that make it possible to effectively address domestic violence with the objective of ending violent behaviour. We identified five key therapeutic interventions of RFT: (1) addressing the affective atmosphere, (2) addressing the repetition of the affective atmosphere, (3) reinforcing the affect, (4) addressing the basic affect and intrapsychic experience, and (5) compassion. In the case of violence, the development of specific self-regulation in early life can explain the multigenerational transfer of violence as well as the cycle of violence. With addressing affective atmosphere in the RFT we explore dysregulated responses to stressful events in the present and link them to dysregulated responses in the past. Reinforcing the affect and addressing intrapsychic experience giving the client an opportunity to name and assess parts of violent experience that were unknown to them and take control in the present ways of establishing relationships (Siegel & Solomon, 2013; Stern et al., 2010). Increasing self-control is an important aspect of addressing violence in therapy (Finkenauer et al., 2015). Dysregulated states lead to a belief that the use of self-control does not help achieve the desired goal, or to the experience that with the act of losing control one can physically calm down. One often even gets desired attention in the relationship when losing control of one's behaviour. In order to change violent behaviour, abusers must experience the benefits of self-control in relationships. We achieve that with expressing compassion in the therapeutic relationship. With experiencing safety and security in the relationship, the client can create a new way of implicit relational awareness (Stern et al., 2010) that helps him to better control his own behaviour, hold, process and calm stressful emotions and stop violent impulses. Repetition of these new experiences shapes the perception of oneself and others and increases self-control.

This paper presents one therapeutic example. In order to generalize the results, the research would need to be expanded to include more cases. To understand the long-term links between therapeutic treatment of the family

and the reduction of physical violence, a longitudinal study would be needed to follow families during a longer time period. However, even individual cases can help to find effective interventions to address domestic violence. And the research presented here provides additional insight into the dynamics of violence, showing the importance of changing self-control even at the intrapsychic level of one's experience.

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Spirituality as quality of life's enrichment of adults with intelectual disabilities

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Abstract

Spirituality is an important human quality that we need to be more aware of, think about, talk about and live with in everyday life. As one of the essential dimensions of the quality of life, spirituality gives meaning to an individual's life. It's important that we enable it also for people with intellectual disabilities (ID) who are an important part of society. Despite the importance of spirituality, research in this area is few and it's difficult to establish systematic development of spiritual support for people with ID. Research in this area would contribute to a better understanding of the meaning of spirituality, facilitating and improving the work of professionals with people with ID. In this study, we wanted to consider the personal experience of spirituality in adults with ID and to include it in the concept of the quality of life with qualitative phenomenological research and the help of group interviews. We

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also wanted to provide concrete guidelines for professional support workers on how to structure a spiritual programme and encourage them to give the meaning of spirituality serious consideration. The results have shown that people with ID search for the meaning of life in everyday relationships such as working together, meals, residence, visits and celebrations which means a tremendous amount to them. They want to have time to calm down and meet with God through prayer, conversations, going to Mass and pilgrimages. They find the meaning of life in various social gatherings and authentic presence in the moment, which they experience through personal contacts with other people, calming down with music or spiritual connection with God and other people through prayer. In this sense, spirituality positively affects the experience of improving their quality of life. Spirituality is a way of life that represents a personal life of inspiration, a force that drives people forward. It's the human right that every person with intellectual disabilities can live spiritually, if they choose to do so.

Keywords: spirituality, quality of life, people with intellectual disabilities

Introduction

Spirituality is a unique human ability and quality. It represents a way of life (through celebrations, life in the community, participation and collaboration in events, assisting other people in an altruistic way) based on spiritual living guidelines, the values that the individual follows (Renwick, Raphael, Brown, 1999). Spirituality helps and also offers support, hope and consolation in overcoming different life problems (Skoberne, 2002), while presenting a relationship with something Sacred and other people (Gaventa, 2016). Spirituality is a connecting force that gives meaning to everything in life (Baker, 2002). Everyone is able to experience searching for life-meaning, to realize the opportunities and take responsibility for them (Frankl, 2016). This is a very important fact especially for people with ID. We should see them, firstly as people, worthy of our respect and interest, as part of our society, which, with its human warmth and sense of authenticity and relation, can contribute a lot to our lives. So we talk about intellectual disability characterized by significant limitations in both intellectual functioning and in adaptive behaviour, which covers many everyday social and practical skills. This disability originates before the age of 18 (American Association on Intellectual and Developmental Disabilities, 2019). People with intellectual disabilities are first of all individuals who can do a lot if they have adequate conditions in their environment. That is why we have to enable and develop spirituality and offer support to individuals and their families. Spirituality needs to become a part of person-centered planning (Bertelli, Furia, 2019) and enrich the quality of life of people with ID. In the last few decades, more attention has been focused on researching the concept and factors

which influence the quality of life of people with ID. Quality of life covers the degree of satisfactory, fulfilling life in which the individual, whose life is their own, lives as best as they can (Renwick, Raphael and Brown, 1999). It is an emancipatory concept aimed at the empowerment of people (Liegeois, 2014). Inclusion and the social model in special education and rehabilitation developed community-based support and personal empowerment that, as Vanier (2002) said, the individual becomes what they are, not what others want them to become, even if they don't want to become anything. The vital goal is to provide optimal personal development of each person with ID and systematic spiritual support, for people who want it, as an important part of improving their quality of life. There are a few studies about spirituality and quality of life in which people with ID are involved as participants. Shogren and Rye (2005) in their research with 41 individuals found that they want spiritual activities, because spirituality is an important value for them. In the research of Turner et al. (2004), 29 participants expressed strong religious identities. Prayer was a particularly popular form of religious expression. Participants with ID (Renwick, Brown and Raphael, 1999) experience a high quality of life if they can realize themselves spiritually. All these results indicate that spirituality is an essential part of life. People with ID in their authenticity give an example how to enrich lives and develop personally.

Method

For the purposes of this study, a descriptive and causal non-experimental method was applied with a qualitative research approach. By using the phenomenological research technique, we wanted to get insight into the reality of an individual's experience and a real picture of the case examined, as our purpose is not to generalise, but to spread understanding of the subject studied. The main goal of the research is to consider the personal experience of spirituality, to find out how adult people with intellectual disabilities spiritually live and how it affects their lives. Also, to create information guidelines for providing spiritual support, with a view for improving their quality of life.

The sampling was purposeful. Participants in our research were a small, homogeneous group of 8 adults with mild and moderate ID (aged from 45-65 years old). They all live in a community for people with ID in Slovenia.

Two structured interviews in the group were conducted, based on phenomenological open-type questions, purposed to reveal the real individual spiritual experiences. During the investigation we lived with research participants and two group interviews were used, three months apart. In this way, we got a

broader insight into their experiences and ensured greater validity. The results were analysed with a qualitative substantive analysis (Mesec, 1998).

Our main research issues were:

1. What does spirituality mean to adults with ID?
2. Which conditions, options and support do adults with ID have in their environment to satisfy their spiritual needs?
3. How does the spiritual life of adults with ID show in their daily life and relationships with others?
4. How does the spiritual life of adults with ID affect their subjective satisfaction with their life?

Results and discussion

According to the answers given from the participants and lessons learned from the literature, we divided spirituality into several categories (areas), which are also consistent with the concepts of other authors (Renwick, Raphael and Brown, 1999; Frankl, 2016).

1. the meaning of life
2. living guidelines
3. conditions and support in the environment
4. altruism
5. deeper connection
6. participation in religious activities
7. celebrations of life
8. positive impact on their quality of life

These spiritual categories (areas) are based on the main research issues. They were obtained in a qualitative analysis of participants answers for better understanding of results.

Characteristic of spiritual life for people with ID

In the first research question, we found that spirituality for the people with ID represents the meaning of life (1). The meaning of life (in this regard part of spirituality) is therefore an internal attraction force, as named by Frankl (2016), which leads the individual in life to deal with what life gives you, whether pleasant or unpleasant. Finding the meaning of life is a human mission. Vanier (2002) says that it is a vital goal in being that the individual becomes what it is, not what others want for him to become, or that he doesn't even want to become anything.

The individual must therefore have a sense of life, to strive for something that he wants to achieve, while he needs faith in some Higher, Divine power, that he can be successful.

The results showed that participants have a great deal of leisure activities, food, work in workshops, relaxation, attending mass, attending events in society, socializing; which is consistent with the categories of Lukas (2002 in Frankl, 2016), who, as Frankl's pupil, explored the categories of the meaning of life.

It means a lot to many participants that they can go to work as all people, they are proud of their work as a process and final products as the goal of their work in workshops. As Vanier said (1982) work is important, even more so, because it creates opportunities to work together. This relationship is essential for people with intellectual disabilities.

Being together is an experience that gives participants the safety, acceptance, feeling of being loved and the importance for the other people, that they are not forgotten, pushed aside, which often happens in non-inclusive societies, where people with intellectual disabilities are rejected. This feeling of being loved raises positive feelings in them as well (one of the participant's authentic answer: *…I like to see, that we are together…*). They have the desire and joy to visit the sacred mass, prayers and they wish to cultivate their relationship with God.

The people with intellectual disabilities are experiencing faith from the perspective of relation, which faith itself is (Fowler, 1981; in Prijatelj, 2007); despite their lower cognitive abilities.

The participants themselves experience the necessity of self-knowledge and make their own choices, suggesting the need for freedom to stand alone among the given options that they can materialise and assume responsibility for.

The results show that spirituality provides living guidelines (2) for the participants, which guide individuals in their action outward. This division refers to the orientation of spirituality inside and out. Spirituality can be regarded as an inward-oriented quality that with its values, the sense is intricate with the outward-oriented, manifesting in an individual behavioural, deboning function (Lepherd, 2013). We are talking about the integration of the body, intellect and spirit.

The participants are aware of the differences between good and bad, which is manifested through social interactions and they have the opinion that it is necessary to strive for good and right (one of participant's authentic answer*: You have to do something, if you want to go to heaven*. *You have to think what…*). They know the forms of respectful and irrespectful attitude. They are also aware that in the community there are agreed-upon rules that apply to all people and which are necessary. They know their duties and they are aware that

they must be carried out. That's their responsibility. Family, friends, school, society of Coexistence-Sožitje (non-profit organization for people with intellectual disabilities in Slovenia), community, church are factors that affect the creation of their living guidelines. We see that influences are different, often they are interactively interlaced.

As Musek says (2015), the individual feels happier, fulfilled if it achieves their expectations and desires, which are guided by its principles of life.

Environmental conditions and support for a spiritual life

The second research issue related to conditions and support in the environment (3). Participants find great meaning in visiting a priest, as the conversation offers them a source of assistance and consolation. With him they also attend spiritual exercises, sacred mass and pilgrimage. They are happy to attend the Sunday sacred mass, a daily prayer, celebrate personal and Christian holidays, they have time for reflection in the community where they live and also have a chapel (one of participant's authentic answer*:…in church is also nice…*).

The conditions that an individual has in the environment have a significant impact on his quality of life. The fact is that people with ID should have more autonomy in decision-making of their own lives. People who have more chance for self-realization and a spiritual life, more often experience life satisfaction. Some people with ID want and need to progress spiritually. Society and professionals have to create support services to empower individuals and allow them to participate actively in decision-making about their own lives. We need to look at an individual's potential in the best possible way. More attention should be paid to supportive environment and environmental resources than to intellectual disabilities, so that people feel a higher life satisfaction (Simoes and Santos, 2016).

Spiritual life as a way of life

In the third question, we were investigating how spirituality is reflected in everyday life of people. There are many older people in the community who need more assistance, which encourages younger ones to notice and provide them with the necessary assistance, according to their capabilities. We're talking about altruism (4). In situations where a person with unrest senses the behaviour of another, they prefer to retreat to a quiet place, which suggests the ability to be assertive.

Spirituality is also strongly reflected in participants feelings for a deeper connection (5).

Spirituality is being framed vertically (as a connection with God) and horizontally (connecting with each other, the environment). All this confirms the fact that persons with intellectual disabilities are capable of feeling and living spiritually, in particular in their relationships (despite lower intellectual abilities) (Lepherd, 2013). Our participants feel the vertical connection with God. They believe in God, who is good, gives hope and help, and in the eternal heavenly life in beauty and happiness. For them prayer is also important as a source of resistance (one of the participant's authentic answer*: …oh, how nice it will be in heaven. Eternal happiness!...)*. They especially like to sing at meals. In prayers they remember their loved ones, they ask for health as well as for all those people, which no one remembers any longer. All this points to the importance of experiencing a relationship for them. They feel especially connected with their friends, looking forward to their visits and making conversations. This is a horizontal connection. As Vanier (2002) said, in this way the people share their lives. Common meals symbolise the relationship and the community, as they feel a family atmosphere on these occasions. Vanier (1982) said that it is the time to listen and share their own experiences that build an affiliation, that is crucial for those people. They are also deeply connected with themselves through free time, music, nature, relaxation, allowing them to enrich their experiences. This is also the time to internalize, time to think in silence, because it means growth (Vanier, 2002).

Participants collaborate in religious activities (6): sacred mass, pilgrimage and spiritual exercises. They are particularly pleased to hear the song, receive the holy communion and sermons, or catechism. Spiritual exercises represent for them a source of reassociation and relaxation in coping with crisis situations.

They celebrate various personal, religious and folk holidays. Celebration (7) is an opportunity to delight and share this joy with others. It makes everyone happy (one of the participant's authentic answer*:…We sing and celebrate together. That we are a family...*).

In all these ways the participants live spiritually.

Influence of spirituality on the quality of life

In the last research question, we were investigating how spiritual life affects the participants' subjective quality of life.

The concept of quality of life is a complex, multidimensional concept that has significant effects on an individual's life experience. Each individual may be reflected in their own way, even if it contains both subjective and objective factors (Bratković and Rozman, 2007).

The individual perception of the individual's own role in life is particularly important in the context of the cultural and value environment in which he lives and with his aims and desires. The quality of life is the result of satisfying the basic individual's needs and the fulfilment of basic duties in the social environment (either at home, at school, service...) (Schalock and Verdugo, 2002).

The findings of our survey show that the effects of spirituality have a positive impact on the participants quality of life (8). Most of them reported satisfaction with their current life and everything they are able to do. They have appropriate opportunities and resources for living a fulfilling life. They subjectively experience their lives as good. This shows the necessity/need to provide the possibilities and conditions for the integrated development of individuals so that they can really feel higher life's satisfaction, which in the group of people with intellectual disabilities is primarily the task of experts (like our participants who live in the living community), or families (if the person lives at home). It's necessary to provide the appropriate promotion and provision of support for more independence, to increase their quality of life. In this way, people will maintain and further strengthen their own identity.

Spiritual guidelines

Based on individual experience, we provided concrete guidelines for experts in the living communities and workshops, on how to structure a spiritual programme for reflecting and enabling more opportunities for people with ID to express their own spirituality, develop their spiritual potential, satisfying their personal needs, to ensure a supportive inclusive environment and improve their quality of life. In this way,we encouraged them to give the meaning of spirituality serious consideration for people who desire to live spiritually. We recommend:

- Providing activities to actively spend free time.
- Enabling regular duties in the living community for each person.
- Promoting socializing in the local environment; volunteers as part of the support.
- Providing a peaceful corner (a chapel), a quiet area where the spiritual material (paintings, music, icons, religious literature) is available.
- Organized personal time for calming down: listening to (spiritual) music, listening to quotes from the Bible, and personal prayer in his own room.
- At mealtime, to introduce a common greeting, thought, gratitude.
- Group evening reflection.

- Spiritual support: the provision of a priest in the living community (visits, mass, prayer, conversation).
- Organizing groups (such as discussion groups, groups for prayer, singing spiritual poems, spiritual exercises, pilgrimages).
- Enabling the people to decorate their own room in the way they want to (hang and set religious symbols).
- Providing reading, music materials, pictures with spiritual content in the community library.
- Introduce residents' personal celebrations when they can invite the family, relatives, friends.
- Religious holiday celebrations are celebrated in a special way.
- Meetings of parents, families, other living communities of people with ID.
- Connecting with the local environment, parish and inclusion of people with ID.
- Enabling volunteering to people with intellectual disabilities (organisation of Caritas...).
- To invite volunteers to offer the necessary assistance to people with ID for visiting events or socializing.
- Providing the possibility to visit Sunday mass in the local parish.
- Connecting with the Organization of Faith and Light: summer camps, monthly catechetical gatherings, visiting pilgrimage centers ...
- Designing support services, expert group that is in charge of planning, implementation and evaluation of an individual spiritual program for people with ID.
- To ensure awareness and education of all professional workers from the living community in the field of spirituality.
- To offer information and opportunities to involve the parents and family members. Also, to advise where can they find spiritual support.

Conclusion

As we have discovered, it is important to see people with ID as integrated human beings, who have a lot of potential, specific individual needs and interests. The results have shown that people with ID search for the meaning of life in relationships as working together, meals, residence, visits, and celebrations – meaning a tremendous amount to them. They want to have time to calm down and meet with God through prayer, conversations, going to mass, and pilgrimages. They find the meaning of life in various social gatherings and

authentic presence in the moment, which they experience through personal contacts with other people, calming down with music or spiritual connection with God and other people through prayer. In this sense, spirituality positively affects the experience of improving the quality of life.

The research gives us a personal perspective of the importance of spiritual life for people with ID. The phenomenological research does not want to generalize, their main goal is to provide reflection about important topics in society. We wanted to provide a better results validation. During the investigation we lived with research participants and two group interviews were used. Our phenomenological analysis consists of results of both interviews and notes. For future research it will be appropriate to also conduct interviews with people with ID, who live with their familiars, experts, who work in the living communities and parents. It will be necessary to form a professional team to conduct the phenomenological research, which is the most appropriate to discover experiences of people with ID. This is a step in creating a more inclusive environment for all people and provide community and personal development in which the spiritual life affects the experience of improving the quality of life.

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