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Research Article

# Contribution of Affect and Cognition in Shaping Aesthetic Responses

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Art appreciation is one of the most unique human experiences (Pepperell, 2011), often being associated with exceptional states of consciousness. These experiences are formed based on the interaction between the work of art itself, the observer, and the context. Using the multilevel modelling with crossed random effects analysis, we explored the connection between the affective and cognitive appraisals of a visual work of art and the aesthetic judgment. Two studies were performed. In the first, lay persons ( $N = 34$ , 29 women,  $M_{age} = 18.6$  years), appraised figural paintings with pleasant and unpleasant content. In the second study ( $N = 72$ , 54 women,  $M_{age} = 18.5$  years), abstract and realistic paintings were appraised. Both affective and cognitive appraisals have a positive connection with aesthetic judgement. Naïve observers use everyday, practical perception when evaluating works of art, and the paintings which are more fluently processed were assessed as more aesthetically pleasing. The deviation of a painting from traditional art canons further strengthens the reliance on everyday perception in lay persons, whereby these artworks lose their artistic status becoming closer to ordinary, everyday objects.

**Keywords:** aesthetic judgment, hedonic value, comprehensibility, multilevel modelling

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## Introduction

The ideals of the beautiful and pleasant are no longer the focus of contemporary visual art. Instead, avant-garde art takes on a new discourse that accepts cognitively hermetic works of art that are sensationalistic, propagandistic, or simply unpleasant and ugly. Because of this new paradigm of contemporary art, lay persons, and sometimes even the art world, consider these works distant, incomprehensible, or on the wrong track (Young, 2001). The current research aimed to determine how the naïve audience reacts to non-canonical artworks that deviate from the traditional concept of being pleasant and comprehensible. In this paper canonical works are defined as those that fit into the naïve person's view of art, that are congruent with their art scheme (pleasant and realistic) and fluently processed.

Aesthetic appraisals are formed based on the interaction between the work of art itself, the observer, and the context, but there is no agreement in empirical aesthetics about the ways these factors operate. On one pole are theories of fluent processing which, relying on the mere-exposure effect (Zajonc, 1968), assume that the more fluent the processing, the more positive the aesthetic response (Belke et al., 2010; Graf & Landwehr, 2015; Reber et al., 2004). According to this view, symmetrical patterns (Reber, 2002), familiarity (Whittlesea, 1993), good Gestalt (Koffka, 1935/1999), meaningfulness (Martindale et al., 1990), pleasantness (Bornstein, 1989) or prototypical forms (Martindale et al., 1988) are preferred because they facilitate fluent processing. Providing additional information on an artwork (Belke et al., 2010) or art training (Stojilovic & Markovic, 2014) are also ways to improve cognitive fluency. At the opposite end, there are approaches that believe that precisely the works that represent a challenge led to a stronger and more positive aesthetic response (Ishai et al., 2007; Jakesch et al., 2013). Reacting to an aesthetic object depends not only on the characteristics of the object itself, but also on dynamic processes and the degree of elaboration of the observer himself (Muth & Carbon, 2013). First inspection of hard-to-comprehend artworks (i.e., unpleasant, abstract) evokes a negative affective response in naïve observers. Then it is necessary for them to achieve a quick insight or

only to anticipate it (Muth et al., 2019; Muth & Carbon, 2013, 2016), in order to reduce uncertainty, which leads to a more positive affective response (Van de Cruys & Wagemans, 2011). The importance of cognitive processes in the formation of an aesthetic response, especially those paintings in which the object cannot be immediately recognized, is indicated also by the connection between the duration of elaboration and affective response (Pepperell, 2011). Finally, the very context in which the appraisal of paintings takes place, or the feeling of security affects the aesthetic experience (Carbon et al., 2013; Gartus & Leder, 2014).

Models of aesthetic dynamics involve different processes that are related to the final aesthetic response, and most include both emotional and cognitive components (Graf & Landwehr, 2017; Leder et al., 2012; Marković, 2012; Nadal et al., 2008; Pelowski et al., 2016, 2017). Affective processes and responses to works of art are an inalienable part of art (Cupchik, 2006; Graf & Landwehr, 2017; Pelowski & Akiba, 2011; Silvia, 2009). One often hears the opinion that the value of a work of art rests on the strength of the emotions it evokes in the audience. This connection with affect is also indicated by recent neuroscientific research on the importance of the reward system in shaping the aesthetic response (Skov & Nadal, 2021). The same work can provoke emotions by a combination of several sources (e.g. symbolic and structural regularities), and can simultaneously evoke various and even opposite emotions (Menninghaus et al., 2019; Pelowski et al., 2017).

Emotional reactions to artworks may range from very mild to strong, from positive to negative, and from simple to complex (Pelowski et al., 2021; Prinz, 2012; Reber et al., 2004; Silvia, 2009). A problem for contemporary psychological theories of art is explaining the relationship between emotional and aesthetic appraisals when encountering artworks that provoke negative emotions, such as Goya's, Bosch's, or Beckman's paintings, to name just a few. Modern art, for example, may elicit positive emotions, but also the states of ambiguity, uncertainty (Jakesch & Leder, 2009), unpleasantness, disgust or anger (Silvia & Brown, 2007). Research on photographs with negative content has shown that they are assessed as both unpleasant and pleasant

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(Menninghaus et al., 2019; Van Dongen et al., 2016; Wagner et al., 2014). However, importantly, photographs presented as artwork are perceived as more pleasant than ordinary documentary photographs, due to the assumed activation of the art scheme. As this study indicates, a positive affective reaction to a work of art is an inalienable part of the aesthetic process, regardless of the style and content of the work.

Nevertheless, the question remains whether and how the strength of connection between positive affective and aesthetic responses changes for artworks that vary in terms of how they fit into naïve observers' canons of visual art. Our assumption was that there is a positive correlation between hedonic and aesthetic responses, and that this connection strengthens as naïve observers encounter works that increasingly deviate from traditional canons of beauty (those that are negative in content or abstract). We based this hypothesis on the assumption that non-canonical artworks, due to low fluency and non-congruence with the art scheme of naïve observers, cause surprise and tension in the observer and a stronger reliance on evoked emotions when defining the final aesthetic response (Meyer et al., 1997; Steinbeis et al., 2006).

The second, cognitive domain has an important role in aesthetic experience because it controls and gives sense to the whole process (Marković, 2012). When creating an aesthetic response, the audience goes through a clear order of processing, regardless of whether they are naïve observers or art experts (Augustin et al., 2008, 2011). For example, in the model proposed by Leder and colleagues (2004), the "explicit classification" stage is based either on depictive content or on style information of the artwork. Which of the two aspects becomes more central depends on the beholder's level of art expertise and the nature of the artwork (Belke et al., 2006). Similarly, the Marković model (2012) of aesthetic experience, suggests the existence of two levels of cognitive processing: processing of a narrative and processing of form and composition. Using the second level, abstract art conveys its meanings to the observer; at this level, specific art knowledge is important (Belke et al., 2006; Bulot & Reber, 2013; Leder & Nadal, 2014). Previous research

mostly indicate that non-art trained subjects prefer more realistic than abstract paintings (Heinrichs & Cupchik, 1985; Stojilovic, 2017; Szubielska et al., 2021; Vartanian & Goel, 2004), but there are also opposite results (Pepperell, 2011).

The second aim of our research was to investigate the connection between cognitive and aesthetic assessments. We focused on examining whether the strength of connection between these two assessments varies when the degree to which a painting fits into traditional art canons varies from realistic to abstract. Our assumption is that the strength of connection becomes more powerful as the work increasingly deviates from the canonical (realistic) and becomes non-canonical (abstract), due to the low fluency and disruption of the art scheme in naive observers for more abstract works. Violation of the art scheme leads to a stronger reliance on everyday perception, where the intelligibility of the observed object is strongly preferred.

## Study 1: Pleasant and unpleasant paintings

### Method

The first study was performed to investigate the connection between affective and cognitive appraisals with the aesthetic appraisal of realistic paintings that have pleasant or unpleasant content.

#### *Participants*

The study comprised convenient sample of 34 participants from introductory psychology courses from the University of Kosovska Mitrovica who received credit toward a research option. The majority of participants were female ( $N = 29, 85\%$ ), aged 18–19 years ( $M_{age} = 18.6$  years,  $SD = 0.50$ ).

#### *Materials*

*Stimuli.* The study utilized 17 figural paintings from the Renaissance to contemporary periods. In a preliminary study, the authors had singled out 84 figural paintings of varying degrees of pleasantness from relevant art collections. These paintings were exhibited via an online form to a group of

19 evaluators; these were first-year psychology students who did not participate in the main research study. The evaluators were asked to appraise each of the paintings according to their degree of pleasantness (from 1 = *extremely unpleasant* to 7 = *extremely pleasant*). The range of painting pleasantness from 2.4 to 6.8 was obtained. In the final selection, the authors selected 17 paintings based on the following principles: 1) paintings that had extremely high (above 6) and low scores (below 2) were rejected due to the potential effect of rank restriction, 2) for paintings that had the same or very similar scores (difference less than 0.05) only one painting was randomly selected, and 3) care was taken to ensure that the selected paintings were at as similar distance as possible from each other. The final range of painting pleasantness in the main study was from 2.4 to 6.0 with an average mutual distance of 0.23. The paintings were then ranked from least pleasant (rank 1, painting "Saturn Devouring His Son", by Francisco Goya, c. 1819–1823) to most pleasant (rank 17, painting "The Promenade (Julienne Dubanc and Adrienne)" by Pierre-Auguste Renoir, c.1906).

*Instruments.* The participants' interest in art was determined using three questions related to their degree of interest in art, painting and modern painting (1 = *not at all* to 5 = *very much*) (Stojilović & Marković, 2014). These three questions were averaged to obtain an overall value for "interest in art" (Cronbach  $\alpha = .75$ , acceptable alpha level according to George and Mallery (2003), 95% *CI* [.71, .78],  $M = 2.31$ ,  $SD = 0.93$ ).

The participants rated each of the paintings on the domain of hedonic value using three seven-point Likert-type scales; these assessed how pleasant, likeable, and optimistic the paintings were. The responses were averaged to obtain an overall value for Hedonic value or positive affective assessment ( $\alpha = .79$ , acceptable level, 95% *CI* [.76, .82],  $M = 4.58$ ,  $SD = 1.71$ ).

An additional three scales were used to examine cognitive appraisal; these assessed how comprehensible, intelligible, and understandable the paintings were. The responses were again averaged to obtain an overall value for cognitive assessment or Comprehensibility ( $\alpha = .84$ , good level, 95% *CI* [.82, .86],  $M = 4.84$ ,  $SD = 1.90$ ).



The participants also rated the paintings using two seven-point Likert-type aesthetic scales, these assessed beauty and fascination. The two scales were utilized to examine whether different aspects of aesthetic assessment (beauty and fascination) are differentially connected with affective and cognitive appraisals. "Beauty" corresponds to a more traditional understanding of art, in which the expressiveness of emotions and the conventionality of content and form are important (Carroll et al., 2012; Scruton, 2011). "Fascination" relates to our understanding of an aesthetic experience as an exceptional state of mind, whereby even ugly scenes can provoke an aesthetic experience (Marković, 2012; Pelowski et al., 2021).

### *Procedure*

The participants performed the evaluation of artworks in groups of 6 to 12 people. All paintings were displayed via an LCD projector. The average display time of one painting was 100 seconds. The order of presentation of the paintings was counterbalanced. The experiment lasted 45 minutes per group.

### *Analytical strategy*

*Preliminary analyses.* Descriptive analysis, linear regression analysis, and Cronbach's alpha internal consistency coefficients were used to describe and compare the subject level variables. All analyses were performed using SPSS for Windows, version 26.0. Statistical significance was defined as a two-tailed p-value of  $<.05$ .

*Multilevel modelling.* We used multilevel modelling with crossed random effects analysis, with a within-subject and within-stimuli design (Chang & Lane, 2016; Heck et al., 2013; Hoffman, 2015). The restricted maximum likelihood method (REML) was used to evaluate the model because its variance estimates are less biased with fewer level-2 entities (here individuals), the REML has the property that if the level-2 entities are balanced (have equal level-1 responses), its estimates are equivalent to analysis of variance (ANOVA) estimates, and it is a preferred model for small samples (Hox, 2010). Maas and Hox (2005) report that with as few as 30 level-2 entities (individuals), REML estimation produces accurate variance estimates.

Therefore, the minimum number of respondents was set on 30. The significance of fixed effects was assessed using  $p$ -values of the Wald test, and the significance of random effects was estimated using  $-2\Delta LL$  likelihood ratio tests and informative criteria (Akaike's information criteria and Bayesian information criteria) between two models that include the same fixed effects (Hoffman, 2015). At both levels (participants and paintings), the identity correlation matrix was defined. The Satterthwaite method was used to estimate denominator degrees of freedom.

### Results: Study 1

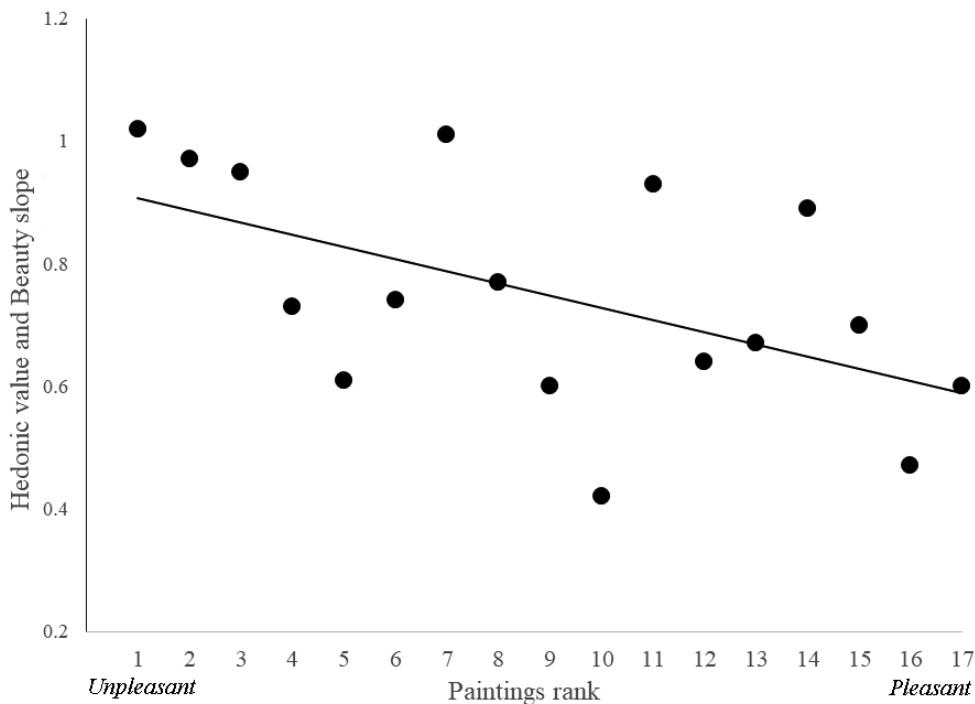
Increases in paintings' rank (i.e. pleasantness) were associated with increases in appraisals of: Hedonic value (standardized  $\beta = .94$ ,  $F(1, 15) = 108.03$ ,  $p < .001$ ), Comprehensibility ( $\beta = .78$ ,  $F(1, 15) = 23.30$ ,  $p < .001$ ), Beauty ( $\beta = .89$ ,  $F(1, 15) = 55.95$ ,  $p < .001$ ) and Fascination ( $\beta = .50$ ,  $F(1, 15) = 4.904$ ,  $p = .043$ ).

Model 0 (Table 1 within the online Supplementary material) reports the estimates of fixed and random effects in the model. The average score for the paintings' Beauty was 4.81, and intercepts varied significantly across paintings (Wald  $Z = 2.685$ ,  $p < .01$ ) and across subjects ( $Z = 2.710$ ,  $p < .01$ ). Similarly, the average Fascination score was 2.92, and intercepts varied significantly across paintings ( $Z = 2.590$ ,  $p < .01$ ) and across subjects ( $Z = 3.440$ ,  $p < .01$ ).

Model 1 (Table 1 within the online Supplementary material) included individual ratings for Hedonic and Cognitive appraisals of the paintings. These covariates were centered at 4 to facilitate interpretation of the intercept and their simple main effects. The simple main effect analysis indicated that beauty increased by 0.82 for every 1 unit increase in Hedonic value ( $t(357.8) = 20.439$ ,  $p < .001$ , 95%  $CI$  [.718, .870]) and increased by 0.17 for every 1 unit increase in Comprehensibility ( $t(428.7) = 5.072$ ,  $p < .001$ , 95%  $CI$  [.109, .247]). The Hedonic value by comprehensibility interaction was non-significant (unstandardized  $b = -.03$ ,  $t(557.43) = 1.88$ ,  $p = .06$ ) and was therefore not used in subsequent models. In the next model, the variable "Interest in art" was included; this did not improve the model ( $b = .12$ ,  $t(32.00) = 1.77$ ,  $p = .09$ ) and the variable was therefore excluded from further analysis.

Fascination values for the paintings increased by 0.34 for every 1 unit increase in Hedonic value ( $t(553.7) = 5.907, p < .001, 95\% CI [.229, .458]$ ), and increased by 0.15 for every 1 unit increase in Comprehensibility ( $t(559.7) = 2.970, p < .005, 95\% CI [.051, .250]$ ). Interest in art, again, did not improve the model and was therefore excluded from further analysis ( $b = .28, t(32.07) = 1.80, p = .08$ ).

In model 2 (Table 2 the online Supplementary material), the rank of the observed paintings was added. This analysis aimed to determine the relationships (represented by slopes) between Hedonic and aesthetic appraisals, as well as between Comprehensibility and aesthetic appraisals for each rank of the paintings. Using simple regression analysis, we examined whether changes in the degree of pleasantness of the paintings (rank) predicted a linear trend of change in the slopes (hedonic-aesthetic relationship and comprehensibility-aesthetic relationship). A linear regression established that the rank of a painting could predict the slope between Hedonic value and Beauty ( $F(1, 15) = 6.320, p = .024$ ); the paintings' ranking accounted for 29.6% of the explained variability in the connection of the Hedonic values and Beauty slope. The regression equation was predicted Hedonic-Beauty slope =  $0.93 - 0.02 \times \text{paintings' rank}$  (Figure 1). The connection between appraisals of Hedonic value and Beauty decreased linearly with increases in the paintings' ranking i.e. level of pleasantness. In contrast, the paintings' Comprehensibility and Beauty were not linearly connected with the ranking ( $F(1, 15) = 1.545, p = .23$ ). Regarding Fascination, no linear connection was found between the change in slope and the paintings' ranking.



**Figure 1.** Relationship between Paintings' pleasantness (rank) and Hedonic value - Beauty slope.

### Discussion: Study 1

The obtained results indicate that both hedonic and comprehensibility assessments are positively related to the aesthetic responses. Hedonic assessment is more strongly related to appraisals of beauty than to appraisals of fascination. Regarding the cognitive assessment, similar intensity in relationships with beauty and fascination appraisals were found.

The main research hypothesis – strengthening positive correlation between hedonic reactions and aesthetic responses for non-canonical artworks – was confirmed for the beauty-hedonic relationship changes. The correlation between hedonic reactions and beauty appraisals strengthens as we move to the less fluent paintings with more negative (non-canonical) content.

## Study 2: Realistic and abstract paintings

### Method

Our second study investigated the connection between hedonic and comprehensibility assessments and aesthetic appraisals for the paintings varied in realism/abstraction.

#### *Participants*

The study comprised a convenience sample of 72 participants from introductory psychology courses, who received credit toward a research option for their participation. The majority of participants were females ( $N = 54$ , 75%), aged 18–19 years ( $M_{age} = 18.5$  years,  $SD = 0.50$ ).

#### *Materials*

*Stimuli.* The study utilized 16 paintings, from the Renaissance to contemporary periods, with different degrees of abstraction. The paintings ranged from realistic images that mimetically support reality, without any or with minimal deviation from the real form to abstract images in which real objects cannot be recognized and with no clear theme. In preliminary research, the authors had singled out 93 paintings with varying degrees of abstraction from relevant art collections. These were presented via an online form to a group of 19 evaluators (the same individuals as in Study 1). The evaluators were asked to appraise each of the paintings according to their degree of abstractness (from 1 = *abstract* to 7 = *realistic*). The range of realisms of the paintings from 2.08 to 6.54 was obtained. Following the same principles described in Study 1, the authors selected 16 paintings whose range of realism ranged from 2.08 to 5.99. The selected paintings were then ranked from the most abstract (rank 1, “No. 8 (White stripe)” by Mark Rothko, 1958) to the most realistic (rank 16, “Madonna and Child with the Book” by Raphael, c. 1503).

*Instruments.* We used the same instruments as in study 1. The overall values obtained were: Interest in art  $\alpha = .78$ , acceptable level, 95%  $CI$  [.75, .80],  $M = 2.96$ ,  $SD = 0.75$ ; Hedonic value  $\alpha = .87$ , good level, 95%  $CI$  [.86, .88],  $M = 4.79$ ,

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$SD = 1.49$ ; and Comprehensibility  $\alpha = .89$ , good level, 95%  $CI$  [.88, .90],  $M = 4.77$ ,  $SD = 1.68$ .

### *Procedure and Analytical strategy*

The same procedure and analytical strategy were used as in Study 1.

### Results: Study 2

As the degree of realism of the paintings increased, the rating increased, for all variables: Hedonic value standardized  $\beta = .84$ ,  $F(1, 14) = 33.29$ ; Comprehensibility  $\beta = .99$ ,  $F(1, 14) = 1671.83$ ; Beauty  $\beta = .87$ ,  $F(1, 14) = 44.92$ ; and Fascination  $\beta = .89$ ,  $F(1, 14) = 52.76$  (all  $p$ -values  $< .001$ ).

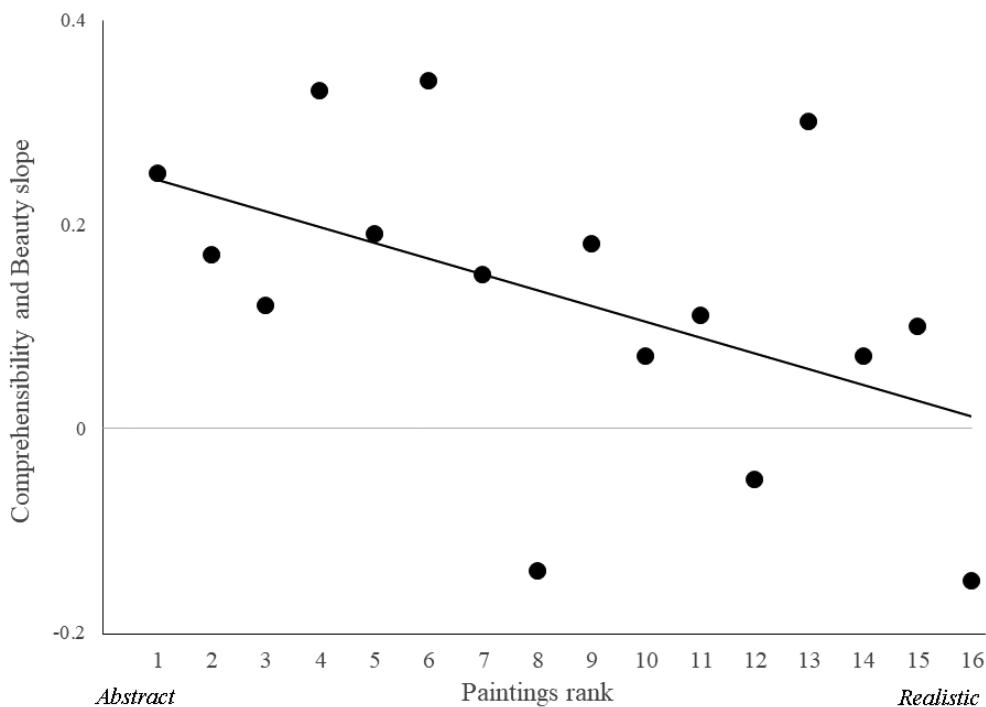
Again, we used multivariate analysis with crossed random effects modelling to further analyze the data. Model 0 (Table 1 within the online Supplementary material) presents an empty model with the estimates of fixed and random effects. The average score for Beauty for the assessed paintings was 4.91, and intercepts varied significantly across paintings ( $Z = 2.611$ ,  $p < .01$ ) and across subjects ( $Z = 4.831$ ,  $p < .001$ ). The average score for Fascination for the paintings was 3.25, and intercepts varied significantly across paintings ( $Z = 2.571$ ,  $p < .01$ ) and across subjects ( $Z = 5.416$ ,  $p < .001$ ).

In the model 1, the simple main effect analysis of change in Hedonic value indicated that Beauty increased by 0.86 for every 1 unit increase in Hedonic value ( $t(897.8) = 34.79$ ,  $p < .001$ , 95%  $CI$  [.813, .911]). Likewise, Beauty increased by 0.15 for every 1 unit increase in Comprehensibility ( $t(545.47) = 6.81$ ,  $p < .001$ , 95%  $CI$  [.107, .194]). These results suggest that assessments of the paintings' Hedonic value and Comprehensibility are positively correlated with appraisals of Beauty. The addition of a subject level variable "Interest in art" did not improve the model and was therefore excluded from further analyses (unstandardized  $b = .01$ ,  $t(69.45) = 0.23$ ,  $p = .09$ ).

Fascination for the paintings increased by 0.58 for every 1 unit increase in Hedonic values ( $t(1023.66) = 15.056$ ,  $p < .001$ , 95%  $CI$  [.503, .654]), and increased by 0.18 for every 1 unit increase in Comprehensibility ( $t(764.57) = 5.024$ ,  $p <$

.001, 95% CI [.108, .246]). The addition of the "Interest in art" variable did not improve the model ( $b = .03$ ,  $t(69.95) = 0.224$ ,  $p = .08$ ).

In the last step (Model 2, Table 2 in the Supplementary material), we added the rank of the observed paintings as a variable. We then, using simple regression analysis, examined whether the degree of realism/abstraction of the paintings could predict the linear trend of slope values. A linear regression established that the paintings' rank could predict the Comprehensibility–Beauty slope ( $F(1, 14) = 4.787$ ,  $p = .046$ , Figure 2), and rank accounted for 25.5% of the explained variability in the slope. The regression equation was: predicted Comprehensibility–Beauty slope =  $0.26 - 0.02 \times \text{paintings' rank}$ . In other words, the strength of connection between the assessments of Comprehensibility and Beauty grew linearly with the increase in abstraction. The model that included the slope of Hedonic–Beauty assessments and ranking was not significant ( $F(1, 14) = 3.184$ ,  $p = .096$ ). In model 2, for the aesthetic scale of Fascination, the linear connections between the two slopes and the rank were not determined.



**Figure 2.** Relationship between Paintings’ pleasantness (rank) and Comprehensibility - Beauty slope.

### Discussion: Study 2

The results indicate that Hedonic value and Comprehensibility assessments are positively related to aesthetic assessments. We found a positive linear strengthening of the connection between the Comprehensibility of paintings and their Beauty with the move from realism to abstraction. In other words, the more abstract the painting, the more assessment of beauty coincides with the assessment of its (in)comprehensibility. This linear change was not observed when considering the variable of Fascination.



## General discussion

The two studies were performed to investigate the connection of affective and cognitive processes with aesthetic judgments, and to examine the impact of deviation from naïve persons' traditional art canons on aesthetic judgments.

First, the obtained results indicate a strong positive connection between affective appraisals and the aesthetic response of naïve observers. Previous research has shown that lay persons, compared to art experts, prefer works of popular art or even kitsch because they are more pleasant and "make them happy" (Ortlieb et al., 2017; Ortlieb & Carbon, 2019; Winston & Cupchik, 1992). The obtained results are in line with research by Cupchik and colleagues (Cupchik et al., 2009; Cupchik & Gebotys, 1988; Cupchik & László, 1992), who concluded that naïve observers must learn to pay attention to the stylistic characteristics of a work of art, as such observers often focus only on certain favorite colors or scenes, familiar content, literal or narrative information. Naïve observers rely heavily on emotional aspects when observing artwork (e.g., pleasantness), whereas experts' processing is based on the active elaboration and evokes more complex emotions. The results are aligned with the fluency theory (Graf & Landwehr, 2015; Reber et al., 2004). In our study, we posit that naïve observers failed to overcome the extrinsic (pragmatic) perception and value of beauty and relied primarily on the emotions depicted in the painting itself (art-represented emotions). For naïve subjects, paintings evoke emotions predominantly based on what is depicted or symbolically represented within them, while the transmission of emotions through the formal characteristics of the work (connotational meanings) is more limited. We can conclude that affective judgments, based on the emotions presented in the paintings themselves, are strongly related to the final aesthetic response of naïve observers. The results also indicate that affective assessments are more strongly associated with appraisals of beauty than with fascination for an art object. We believe that appraisals of beauty are more strongly connected with the daily perception, and assessment of ordinary objects such as clothes, cars, food, and so on. This type of everyday

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assessment is more strongly based on hedonism, pleasure, and wellbeing, than on an exceptional state of mind.

Finally, the results suggest that the more the observed painting deviates from the traditional pleasantness scheme, the more their aesthetic judgment is "contaminated" by affective assessments. We believe that when naïve observers encounter paintings with unpleasant content, their art scheme is violated, and their aesthetic judgment is strongly influenced by the unpleasant content of the artistic painting. When appraising such works, naïve observers fail to get insights into Gestalt and recognize formal qualities of artworks, and their aesthetic judgment is guided exclusively by the negative, first impression of unpleasant content shown in the painting. By deviating from the art scheme of naïve observers, a non-canonical (unpleasant content) artwork loses a part of its art, becoming more an object separate from the artistic context, where aesthetic assessment is based on pleasant–unpleasant assessment, as in everyday perception. The experience of these perceived evaluations serves to inform appraisals. As a consequence, affective feelings strongly influence the final aesthetic judgment (Clore & Huntsinger, 2007).

Second, the assessment of paintings' comprehensibility is also positively connected with the aesthetic response of naïve observers. The connection is weaker than for affective assessments, which indicates a stronger reliance on affective assessments when making aesthetic judgments. This supports Cupchick and László's (1992) idea of the superiority of the "emotional" over the "cognitive" style of appraisal in naïve observers of paintings.

Cognitive processes are more strongly connected with beauty appraisals when the paintings are abstract. We suggest this is again due to subjects being unable to create coherent Gestalt, which is felt as a negative affective state (Muth & Carbon, 2013). Because of the deviation of abstract work from a canonical understanding of art, naïve respondents are more strongly guided by the impression of incomprehensibility and resulting confusion, not recognizing other formal characteristics of the work that require knowledge

of art. Thus, their aesthetic judgment is more strongly based on this negative impression.

### Limitations and further research

We see room for improvement of the research in terms of ecological validity; for instance, ecological validity could be improved by conducting similar research in real museums and gallery spaces (Carbon, 2019; Gartus & Leder, 2014). Understanding typical responses to artworks can be further explored by determining associations between the personality traits of observers and their way of responding and preferred artistic styles. Also, the sample sizes and sample type (students) can also influence the results obtained, so the validation with other samples can be beneficial.

### Conclusion

The obtained results suggest that aesthetic judgments of lay persons are primarily pleasure-dependent, based on everyday and extrinsic perception. We posit that the transition to a pleasure-independent aesthetic judgment requires additional art education and exposure to artistic content in an appropriate environment (e.g. museum, gallery) (Stojilović & Marković, 2014; Winsler et al., 2020). In situations when lay persons encounter artwork that is non-canonical, due to the violation of their art scheme, these individuals rely more heavily on their everyday perception abilities in forming an aesthetic judgment, thereby overlooking the formal qualities of the observed work of art. Naïve observers form judgments about such non-fluent works based more on everyday, non-artistic perception, for which pleasantness and comprehensibility play an important role.

#### *Conflict of Interest*

We have no conflict of interest to disclose.

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### *Data Availability Statement*

The supporting materials and data supporting the conclusions of this manuscript are *available on the OSF data repository* (<https://doi.org/10.17605/OSF.IO/76K4G>).

### *Ethics Statement*

The studies involving human participants were reviewed and approved by the ethical committee of the Faculty of Philosophy in Kosovska Mitrovica. Participants provided their written informed consent to participate in this study.

The study was conducted in accordance with the Declaration of Helsinki.

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Research Article

# Goal-Setting Interventions in Sports: Public Goal Monitoring Improves Swimmers' Motivation and Performance

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## ABSTRACT

Interventions based on the goal-setting theory include a goal-setting situation and different feedback variations. Very few studies have compared the impact of different goal-setting interventions on young athletes' performance. This preliminary work aimed to examine the effectiveness of two interventions, goal-setting with private monitoring and goal-setting with public posting. In the study, young swimmers ( $N = 42$ ) with a mean age of 10 ( $M = 9.88$ ;  $SD = 1.88$ ) were assigned to a public monitoring condition, a private monitoring condition, and a control condition. A difference was found in the attendance of training sessions, with the public posting group being superior to other groups. Controlling for baseline performance, participants in the public posting condition performed better than control participants. Public posting created conditions in which it was easier to accept set goals as focal and put greater effort into their attainment. The results contribute to a better understanding of how goal monitoring motivates behavior and performance.

*Keywords:* goal, feedback, public posting, attendance, swimming performance.

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## Introduction

The core of Goal-setting theory is the goal construct. Locke and Latham (1990) define a goal as the intention or object to which the activity is directed. Goals give purpose to an individual's behavior, and they invest energy to attain them. However, not every goal will result in high commitment. The theory predicts that the higher the goal, the better the performance, and that performance will level off or decrease only when the limits of one's ability are reached or commitment lapses (Locke & Latham, 2002). Second, specific, difficult goals are theorized to lead to higher performance than no goals or vague, abstract goals such as "do your best." Importantly, "goal specificity in itself does not necessarily lead to high performance because specific goals vary in difficulty" (Locke & Latham, 2002, p. 706). As such, Locke and Latham largely advocate for specific, challenging goals to increase performance.

In addition to the mentioned goal characteristics, for goal-setting to be effective, the individual needs to know how close to the goal they are at certain points. Classical work inside the goal-setting theory identified the critical role of feedback in facilitating goal-related behavior (Bandura & Cervone, 1983; Erez, 1977; Lerner & Locke, 1995). It seems that the quality of feedback might explain the complex relationship between goal intentions and behavioral performance (Sheeran, 2002; Sheeran & Webb, 2012). For example, recent studies highlighted that feedback positively affects performance by providing goal-relevant information (Aarts et al., 2008; Fischbach & Choi, 2012) and making the goal-attainment progress more salient (Sleiman et al., 2020). While the present literature also recognizes the importance of feedback in the sports setting (e.g., Lauber & Keller, 2014; McEvan et al., 2016), it mostly discusses it in the context of already developed athletes. Complementing and extending prior research evidence, we argue that feedback introduced in goal progress monitoring facilitates goal-attainment behavior of young athletes. Specifically, we tested the hypothesis that public goal monitoring produces higher training attendance rates and better performance than private monitoring or the absence of monitoring.

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## Goal-setting and Progress Monitoring

The presentation of feedback might be related to goal progress monitoring. This process explains the large gap between the formation of goal intentions and attainment (Gollwitzer, 1999; Orbell & Sheeran, 1998). Monitoring occurs when the current level of a target behavior is compared to a salient ideal value (Campion & Lord, 1982; Koo & Fischbach, 2012; Webb et al., 2013). By comparing one's behavior to a set standard goal, attainment promotion occurs. Goal progress monitoring helps to identify possible incongruences between current behavior and the desired goal. When incongruency is detected, the individual is motivated to pursue and implement the most likely decision to remove said incongruence. Progress monitoring is an effective facilitator of goal attainment because it strengthens goal intentions (Gollwitzer, 1999; Sheeran et al., 2005; Sutton, 1998) and enables one to identify when and how much additional effort is needed to attain the desired state (Gollwitzer et al., 2009; Myrseth & Fischbach, 2009).

Harkin et al. (2016) identified six dimensions describing goal-monitoring in behavior change interventions. The first five dimensions (focus, recording, reference point, and activity level) are more related to the content of the intervention. The last aspect is more situational in nature: it relates to whether goal progress monitoring is private or made public. In the first condition, participants are asked to monitor their goal progress in private, while in the other condition, progress monitoring involves the presence of others. Group, public monitoring seems to have a more substantial effect than its private counterpart. For example, Lyman (1984) compared the effects of private feedback and public monitoring on the goal-directed behavior of children with intellectual disabilities. Public performance monitoring resulted in longer attention to work materials, listening to the teacher, and asking task-related questions relative to giving individual, private feedback. Furthermore, the mentioned meta-analysis by Harkin and colleagues (2016) found larger effects on goal attainment when participants were asked to monitor their progress in public than in private.

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Public goal progress monitoring is usually described as performance public posting. Public posting refers to situations where individuals' performance information is presented so that other relevant group members have visual access to it (Nordstrom et al., 1991). Ward (2011) mentions two reasons why public posting is so effective. First, feedback serves to encourage and improve performance. Second, the public posting of performance allows certain public expectations to become norms for behavior in a particular instructional environment.

### Goal Progress Monitoring in Sports Settings

To claim that an athletic achievement occurred, it is often not enough to establish the presence of performance progress. Usually, performance is determined by comparing it to some pre-established standards. Performance criteria are pre-determined, and the training process is adjusted accordingly. For these reasons, goal progress monitoring has found its place in behavior change interventions aimed at the sport setting. In sports and recreation, interventions that combined goal setting, progress monitoring, and feedback were successful in increasing the physical activity of children during school breaks (Koufoudakis et al., 2016), the performance of football players during training (Brobst & Ward, 2002), goal-oriented behavior of rugby players (Mellalieu et al., 2006), tactical performance of American football players (Smith & Ward, 2006), basketball performance of young athletes (Tzetzis et al., 1997), swimmer's chronometric performance (Simões et al., 2012), and tennis serve of physical education students (Boyce et al., 2001). These interventions are widely used in sports and recreation.

Making goal progress monitoring public is a common behavior change intervention in sports. Public posting of performance has increased the attendance and performance of swimmers (McKenzie & Rushall, 1974), the performance of soccer players during training (Brobst & Ward, 2002), the achievement of American football players during training and matches (Ward et al., 1997), movement accuracy in professional dancers (Quinn et al., 2017), performance during college football players' training and matches (Smith &

Ward, 2006; Ward et al., 1997), and time spent in recreational walking (Earney & Bungum, 2004). Galvan and Ward (1998) have demonstrated that public posting can decrease problematic behavior, such as unsportsmanlike conduct.

The mechanisms often studied in group processes may provide a more theoretical explanation of the effectiveness of public posting. According to the social comparison theory (Festinger, 1954; Wood, 1996), people tend to relate their behavior to other relevant individuals to receive feedback on their abilities and values. Furthermore, people choose similar others as their sources of comparison. According to Wood (1996), if the response to social information is positive in creating the motivation to increase one's achievement, one can assume that behaviors that serve that purpose will occur. Comparing one's performance with that of others makes public posting a powerful tool that encourages healthy competition against group members. If individuals perceive others to perform better under the same conditions, they might be motivated to improve their performance.

Another explanation emphasizes that the intervention highlights the value of increased performance. Behavior change theories posit that external influences (among other factors) might be a strong motivator in deciding to translate from goal attainment intention to goal-directed behavior. For example, the theory of planned behavior (TPB; Ajzen, 1991, 2001) understands goal pursuit as a complex interplay between attitude valence, perceived behavior control, and the presence of subjective norms. The *public* component of public goal monitoring might increase the perceived importance of subjective norms by highlighting the social pressure to be successful in goal pursuit. Specifically, making goal monitoring public might increase the value of obtaining higher performance rates (Ward, 2011).

The Multi-process action control (MPAC; Rhodes, 2017, 2021; Rhodes et al., 2021) adapts, integrates, and expands behavior change frameworks to physical activity. According to this perspective, engagement in physical activity is determined by three related processes. *Reflexive processes* include conscious deliberations that result in intention formation. While reflexive

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processes are included in several cognitive behavior change models (Ajzen, 1991; Bandura, 1998), they are not directly responsible for behavior formation (Gollwitzer, 1999; Orbell & Sheeran, 1998). The MPAC assumes that *regulation processes* that include behavioral, emotional, and cognitive tactics that maintain goal pursuit are relevant to translate from intentions to *reflexive processes* where more stable habits are formed. Therefore, public goal monitoring can be seen as an outside intervention to increase engagement in regulation processes (Allan et al., 2013; Carraro & Gaudreau, 2013). Quinn and colleagues (2017) argued that the public disclosure of one's performance creates an atmosphere that strengthens an individual's attainment motivation. Therefore, public goal monitoring may increase the adoption and implementation of behaviors relevant to goal pursuit.

If one can understand public goal monitoring as a strategy to increase regulation processes, it might also contribute to (habit) attainment. Deliberate practice, a systematic activity conducted to improve performance (Ericsson et al., 1980), might explain why public goal monitoring can be seen as a useful tool in skill development. Studies testing the effectiveness of deliberate practice have shown that such activities contribute to increased performance and behavioral goal attainment (Ericsson et al., 1980; Ericsson et al., 1993; Gobet & Campitelli, 2007; Macnamara et al., 2014, 2016). By making a goal and its related progress public, this type of progress monitoring might contribute to constantly repeating performance-related skills and, over time, result in habit attainment.

Simić and Vardo (2018) attempted to extend these findings to the context of young athletes (i.e., youth-level swimmers). In a within-participant longitudinal research design, they compared the effectiveness of a public goal monitoring, with a private feedback and a control condition. Their analysis suggested public goal monitoring to be particularly effective in increasing training attendance rates compared to private feedback and baseline rates. However, their study did not focus on a more important aspect of training participation: performance improvement. Furthermore, the study lacked a viable control group to determine which changes or outcomes are due to the intervention



as opposed to being due to some other variable (Rosenthal, 1990). Finally, the mentioned studies did not answer how public posting improves performance (Kim et al., 2016; Brobst & Ward, 2002). Thus, additional research is required to explore the effects of public goal monitoring and its limitations.

### The Present Research

From this short review of previous studies, it is noticeable that interventions combining goal-setting and feedback were shown to be effective. However, previous work did not directly compare the effect of public posting with the provision of private monitoring (for an exception, see Harkin et al., 2016; Lyman, 1984) and their effect in combination with goal-setting. Furthermore, it is not clear whether public goal monitoring improves performance directly or by providing more opportunities for practicing different achievement-related skills. For example, a tennis player whose attendance is publicly recorded may be present in more training sessions, thus improving their serve. By excluding studies focusing on children in their meta-analysis, Harkin et al. (2016) could not assess the effectiveness of monitoring interventions in younger age groups. Furthermore, although Simić and Vardo (2018) compared the effectiveness of goal monitoring interventions on young athletes, their research design lacked a relevant control group. As previously stated, without a control condition it is hard to make conclusions of a real intervention effect on young athlete's sport behavior. This is particularly relevant for two reasons. First, developmental studies have shown that children and younger adolescents show weaker consideration of future outcomes (Steinberg et al., 2009) and a lower tendency to engage in goal-setting or planning (Verstraeten, 1980; Nurmi, 1991). Second, under the assumption that goal progress monitoring increases the tendency to engage in deliberate practice (Harkin et al., 2016; Mann et al., 2013), such interventions could help develop young athletes' core skills.

Two interventions, including goal-setting and progress monitoring, were compared to fill the mentioned gaps in the literature. The target behaviors in this explorative study were training attendance and the swimming

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performance. First, in line with the literature (Boyce et al., 2001; Brobst & Ward, 2002; Koufoudakis et al., 2016; Mellalieu et al., 2006; Simões et al., 2012; Smith & Ward, 2006; Tzetzis et al., 1977), both public and private goal monitoring interventions are expected to increase participants' attendance relative to the situation in which no feedback is provided. Moreover, based on theoretical assumptions about the strong motivational impact of public posting (Quinn et al., 2017; Ward, 2011) and empirical work on children (Lyman, 1984; Simić et al., 2018), combining goal setting and public goal monitoring might produce greater higher attendance rates than the private monitoring intervention.

Crucially, if attendance increases, it could be assumed that further development of sports skills will occur over time. This assumption is supported by the findings of some studies (Ericsson et al., 1980; Ericsson et al., 1993; Gobet & Campitelli, 2007; Macnamara et al., 2014; Macnamara et al., 2016), which have emphasized the importance of repeating specific actions to obtain and memorize skills. For these reasons, implementing the interventions is expected to increase athletic performance by providing the chance to engage in relevant skill practice. Accordingly, private monitoring is expected to lead to higher swimming performance compared to the control group. Finally, participants in the public posting condition are expected to perform better than participants in other conditions. Such hypotheses have been explored through an experimental study on a sample of young swimmers. The local Ethics Committee approved the study, and consent was obtained from all participants and their guardians. The study was conducted following the ethical standards of the Declaration of Helsinki.

## Method

### Participants

The convenience sample consisted of 42 swimmers (30 male and 12 female participants) from one local swimming club. The average age of the sample participants was 10 years ( $M = 9.88$ ;  $SD = 1.88$ ;  $Min = 7$ ,  $Max = 14$ ). All

participants had gone through elementary swimming instructions, were able to swim competitively 50-meters freestyle without any outside assistance, and were coming from a training group that contained swimmers actively participating in swimming competitions between two and five years.

## Materials and Procedure

The study was conducted at the beginning of the competitive swimming season. Before the experimental procedure, the baseline performance in 50-meter freestyle was assessed at the end of the previous season. Following a one-month season break, the interventions were introduced at the beginning of the new competitive season. The procedure lasted two months and consisted of 12 training sessions and a post-intervention performance measurement. During each training session, three coaches recorded attendance in the checklists. Unlike the baseline measurement, where the performance was measured in a competition event at the end of the season, the post-intervention performance was assessed at the end of the last training session included in the intervention to control all relevant factors related to the competitive situation and physical performance levels of the participants.

The participants were randomly assigned into three groups: public posting, private goal monitoring, and a control group. Training sessions were held three times per week during the same timeslot for all three groups but on separate days. All swimmers worked with the same coaches during the intervention. A detailed procedure for the control and two experimental groups follows.

*Control group - no intervention.* Before the start of the swimming season, the coach informed the swimmers about the importance of high attendance at training sessions. To reduce the likelihood that participants set specific attendance goals (Weinberg & Weigand, 1993, 1996; Weinberg, 2013), participants did not set a "do your best goal." The participants did not have an insight into their attendance during the training nor the attendance of other participants.

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*Private goal monitoring group (PGM).* Each swimmer in the PGM conducted an individual interview with the coach. The participants received the following instructions:

"Now, together, we will try to increase your training attendance. I want you to decide on how many training sessions you would like to come to next month. The maximum number is 12, and the minimum is 0. The number of training sessions is a goal that you will strive to achieve next month. The goal should encourage you to do better, but it should not be too difficult. Think about it, are you sure you can come to all 12 training sessions? Now I will write down that number on this card as it will serve as a reminder of your goal".

The instructions were given to ensure the acceptance of set goals (Erez & Zidon, 1984). Specifically, the coach represents a trusted person for the participants. Participants were also included in the goal-setting process by asking them to indicate how many sessions they would like to attend. Finally, it was emphasized that participants do not set too difficult, unattainable goals. Over the next 12 training sessions, attendance was recorded by three coaches. At the beginning of each training session, the coach indicated on the private cards that the participant was present at the training so that the participants had an insight into their attendance. However, the participants did not know the attendance of other participants in their group.

*Public posting (PP) group.* As in the second group, the participants in the PP group had an identical conversation with the coach. Instead of a card, the participants were shown an attendance table at the end of each conversation, and their goals were entered into the table. Also, the participants received additional instructions:

"I will now put your goal on the scoreboard. At the beginning of each training session, this chart will wait for you to see how close you are to your goal. Together with your friends, you will observe the table to see how well you are doing. "

Over the next 12 training sessions, three coaches recorded attendance. Participants had insight into their own and other participants' attendance and

goals at the beginning and during each training session. Participants were asked to gather around the board and analyze the table for a few minutes.

Attendance rates were operationalized as the average practice attendance over 12 training sessions. The participant needed to be physically present during goal monitoring at the beginning of each training session to be recorded as present. Data was collected using a simple checklist to record swimmers' training attendance frequency. The checklist was constructed in a table format and consisted of participants (columns) and 12 training sessions (rows). Swimmer's session presence was recorded as 1, while the non-arrivals were recorded as 0.

Swimming achievement was assessed by measuring the chronometric performance on 50-meters freestyle. The measured swimming performance expressed in seconds was transformed to the FINA points scale. The World Swimming Federation prescribes the FINA scoring system. It provides a framework to compare different swimming performances where the main reference point is the current world record. In general, more points reflect better performance. It is theoretically possible to score 0, and more than 1000 points are awarded for times faster than the world record in a given event. FINA scores make age group, gender, and swimming event comparisons more straightforward and intuitive. In this study, the swimming performance was expressed on the 2017 FINA points scale for short-course pools. Finally, swimming performance was assessed during baseline and after the implementation of the experimental conditions.

## Results

### Statistical analysis

A one-way, three-level (control, PGM, PP) ANOVA was conducted to test group differences in age and baseline performance. Both analyses were carried out to examine randomization effects. The same omnibus test was implemented to study group differences in average training attendance. Planned orthogonal contrasts were used as a follow-up analysis. The first

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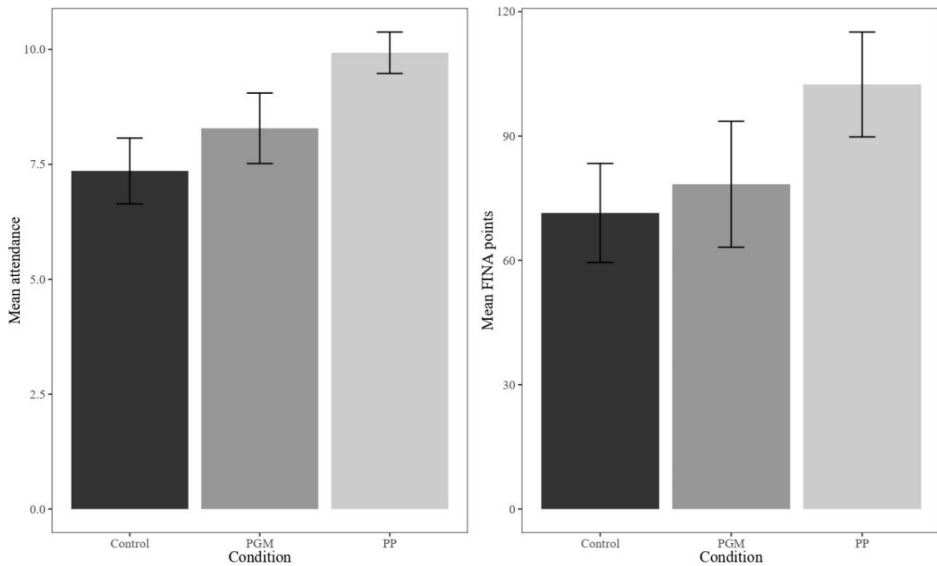
contrast compared the PP and PGM groups to the control participants, while the second contrast tested for differences between PP and PGM groups.

A one-way, three-level (control, PGM, PP) ANCOVA controlling for baseline swimming performance was used to examine group differences in post-intervention swimming performance. Simple, non-orthogonal comparisons were used as follow-ups. The control group was compared to PGM (first contrast) and the PP (second contrast). Finally, a mediation analysis was run to examine whether FINA points differences between the PP and control conditions were mediated by training session attendance. Thus, a mediation model (Model 4; Hayes, 2018) was carried out using the experimental condition as the independent variable (0=control condition; 1=PP condition), training attendance as a mediator, and performance as the dependent variable. The significance of the indirect effect was tested using the bootstrapping method (Hayes, 2018) on 10,000 bootstrapped samples.

### Baseline performance differences

The groups did not differ significantly by age  $F(2,39) = 1.02, p = .369, \Omega^2 = .05$ ; and based on their baseline performance, whether it was expressed in seconds,  $F(2,39) = .64, p = .534, \Omega^2 = .03$ , or on the FINA score scale,  $F(2,39) = .32, p = .612, \Omega^2 = .02$ . Thus, it was found that the groups were not different in characteristics expected to affect the internal validity of the intervention.

## Average attendance differences



**Figure 1.** Average attendance rates and swimming performance of the Control ( $N = 14$ ), PGM ( $N = 14$ ), and the PP group ( $N = 14$ ). Vertical bars indicate 95% confidence intervals of group means.

As shown in Figure 1, participants in the control group attended approximately 7 out of 12 training sessions ( $M = 7.35$ ;  $SD = 2.68$ ). Participants in the PGM group averaged eight training sessions ( $M = 8.28$ ;  $SD = 2.87$ ), while participants in the PP group attended ten training sessions on average ( $M = 9.92$ ;  $SD = 1.68$ ).

The groups were found to be significantly different from each other,  $F(2, 39) = 3.90$ ,  $p = .028$ ,  $\Omega^2 = .12$ . The average training attendance increased by applying either of the two interventions relative to the control situation  $t(39) = 2.17$ ,  $p = .018$  (one-tailed),  $d = .57$ , 95% CI [.13, 1.04]<sup>1</sup>. Additionally, the PP group had

<sup>1</sup> Due to a small sample used in this study, all effect sizes in follow-up analyses were corrected by following the procedure described in Ivarsson et al. (2013; see also Schweizer & Furley, 2016). All 95% CIs reported in follow-up analyses are related to confidence intervals for the differences between means.

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attended more practices than the PGM group,  $t(39) = 1.77$ ,  $p = .043$  (one-tailed),  $d = .33$ , 95% CI [.03, 1.60]. Both interventions led to an increase in average training attendance relative to the control situation. Furthermore, a statistically significant difference in average training attendance was found between the two interventions favoring public posting.

### Post-intervention swimming performance differences

Figure 1 shows the participants' performance on 50 meters freestyle. The control group's average performance was 71 FINA points ( $M = 71.43$ ;  $SD = 44.73$ ). Participants in the PGM group achieved an average of 78 FINA points ( $M = 78.36$ ;  $SD = 56.88$ ). Finally, participants in the PP group achieved 102 FINA points ( $M = 102.36$ ;  $SD = 47.83$ ). Translated into seconds, the participants in the control group swam 50 meters freestyle event in 53.38 seconds on average. The average time of participants in the PGM group was 52.20 seconds. On average, participants in the PP group needed 45.75 seconds to finish the event.

The covariate, the baseline performance on 50-meters freestyle expressed using FINA points, was significantly related to the baseline measurement results,  $F(1, 38) = 128.67$ ,  $p < .001$ . A statistically significant difference was found between the control and experimental groups, with control of the baseline results,  $F(2, 38) = 3.40$ ,  $p = .044$ ,  $\Omega^2 = .10$ . The group differences explained 10% of the swimmer's performance variance at the 50 meters freestyle event.

Participants in the control and the PGM group did not differ significantly,  $t(38) = 1.58$ ,  $p = .123$  (one-tailed),  $d = .14$ , 95% CI [-3.17, 25.66], while a significant difference was found between the control and PP group,  $t(38) = 2.58$ ,  $p = .014$  (one-tailed),  $d = .50$ , 95% CI [4.00, 32.99]. Participants who received private feedback were found to be no different from control participants based on their performance. On the other hand, participants in the public posting condition performed better than control participants.

Another ANCOVA was conducted on the raw performance measurements expressed in time units to check if the performance expression on the FINA points scale affected the analysis results. The covariate was statistically



significant,  $F(1, 38) = 170.53, p < .001$ . Controlling for baseline performance, significant differences between the groups were detected,  $F(2, 38) = 3.70, p = .034, \Omega^2 = .11$ . The PGM group did not differ from the control group,  $t(38) = 1.37, p = .089$  (one-tailed),  $d = 0.09$ , 95% CI [-6.27, 1.20]. On the other hand, participants in the PP group were significantly faster than control participants,  $t(38) = 2.72, p = .005$  (one-tailed),  $d = .58$ , 95% CI [1.28, 8.79]. The second analysis confirmed that the expression of swimming performance on the FINA scoring scale and in time units did not influence different interpretations of the collected data.

A mediation model (Model 4; Hayes, 2018) containing experimental condition as the independent variable (0=control condition; 1=PP condition), training attendance as a mediator, and performance as the dependent variable showed a significant mediation effect of training attendance. Specifically, when including training attendance in a model containing the experimental condition as the independent variable and performance as the dependent variable, the differences between the public posting and the control group become non-significant ( $\beta = .076, t(38) = .216, p = .830$ ). The mediation was found to be significant as the bootstrapped indirect effect (27.16) did not include zero, 95% CI [9.11, 53.30]. In other words, the public posting intervention affected swimming performance through training practice attendance.

## Discussion

This study found that goal progress monitoring significantly increased attendance in swimming training sessions. Both the PGM and PP conditions were different from the control group. It can be assumed that goal progress monitoring had a stimulating effect on the target behavior. Moreover, participants in the PP condition attended more training sessions than participants in the PGM condition. This intervention was more effective than private feedback in increasing attendance. In other words, the current work presents a replication of the results of Simić and Vardo (2018) highlighting that PGM might significantly contribute to increased attendance rates.

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Group differences were found in the performance on 50 meters freestyle. PP group participants achieved significantly better results than control participants in the post-intervention measurement. Furthermore, these participants improved their baseline performance in the post-intervention assessment. Participants from the other groups performed worse in the second measurement. As previously stated, the post-intervention assessment was made at the end of a training session at the beginning of the competitive season. One expects that the swimmers' physical capabilities have not yet reached peak levels in these conditions. In other words, all things being equal, a worse performance should be expected in the post-intervention assessment than in the baseline. While the control and PGM showcased this trend, participants in the PP group improved their performance by an average of just over one second. This finding adds additional strength to the public goal monitoring intervention. Finally, it was found that training attendance mediates the differences between the PP and the control group. Participants who underwent public goal monitoring had higher attendance rates and thus performed better than control participants.

It is important to note that these findings could not be attributed to potential confounds controlled in this study. In addition to the described differences between baseline and post-intervention assessment, the training sessions for groups were held separately to avoid swimmers being aware of the groups' intervention differences. Finally, a post-hoc randomization check revealed no age and baseline performance assessment differences.

In line with the results from previous studies (e.g., Lyman, 1984; McKenzie & Rushall, 1974; Brobst & Ward, 2002; Ward et al., 1997; Harkin et al., 2016), this experiment confirms the applicability of goal-setting interventions in sports and recreation. Combining goal setting with public posting produced the best results. Although public posting is not the only factor contributing to performance improvement (group differences account only for 10% of the variability in FINA points scores), higher training session attendance provided more chances to practice core, performance-related skills. Deliberate practice is known to profoundly affect mastering and remembering complex motor

skills (Ericsson et al., 1980; Ericsson et al., 1993). Participants from the public group had more opportunities to engage in meaningful exercise. This indirect impact of the public posting intervention could explain the progress of participants from this group.

Notably, some results contradict previous research studies (e.g., Koufoudakis et al. 2016) in which private feedback affected athletes' performance. One possible explanation is that private feedback offered a lack of social comparison with the performance of other participants. The lack of opportunity to compare one's performance with others may have diminished the set goal's importance. Specifically, public goal monitoring might have increased the importance of the perceived social pressure for goal achievement (Ajzen, 1991, 2001). Furthermore, feedback acquired from public goal monitoring could have also facilitated the engagement in regulatory processes relevant to bridging goal intentions with goal-directed behavior (Rhodes, 2017; Rhodes et al., 2021). For example, perceived goal importance is a necessary condition for the effectiveness of the interventions based on the goal-setting theory (Locke et al., 1994; Erez & Zidon, 1984). By perceiving that other group members actively engage in goal-striving, participants could assess the importance of achieving their goals. This type of social feedback may have elicited cognitive, affective, and behavioral reactions and influenced the formation of motivation to improve performance (Rhodes, 2021; Wood, 1996). The quality of social feedback might be particularly relevant for children transiting to competitive sports participation (i.e., specialization phase, Côté et al., 2009; Côté & Vierimaa, 2014) where peer comparison becomes the standard of performance (Barreiros et al., 2013; Baker et al., 2005). Simply put, public goal monitoring might enable more peer social comparison, facilitating the motivation to perform and do better (Bruner et al., 2011).

In addition to providing empirical support to some of the theoretical assumptions that arise from the goal-setting theory, the study also has important practical implications. First, the public posting method is an economic intervention aimed at positive behavior change. In a short time, it

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is possible to determine the presence of deficiencies in athletes' physical, technical and motivational capabilities and correct them by a combination of goal setting and public posting. Public posting seems to be well-accepted by coaches because of its simplicity and effectiveness in reducing problem behavior (Galvan & Ward, 1998; Ward et al., 1997) as well as increasing motivation to engage in deliberate practice (Brobst & Ward, 2002; O'Brien et al., 2009). For example, coaches can test the effectiveness of this intervention by simply analyzing and comparing the pre-and post-intervention performance.

Second, public goal monitoring was shown to be beneficial for younger athletes. The implementation of performance posting is related to reducing off-task behavior by recognizing publicly that those who do well comply with the coach's instruction (Balderson & Sharpe, 2005). This method strengthens the motivation to become more engaged in sports and contributes to higher retention of relevant skills. Children who invest significantly more in developing skills related to success stay longer in sports (Côté et al., 2009; Güllich et al., 2020; Ward et al., 2007). Third, the results of this study offer recommendations for writing sports programs to increase motivation for sports participation and performance. The method can be replicated and tested with different participants and situations.

However, the effect of public goal monitoring might be contained only to more externally regulated behaviors. Public performance posting might foster ego-oriented goal orientations by making athletes aware that others are also striving for a similar objective, highlighting the importance of becoming superior to others and avoiding failure (Duda, 1992, 2005). While ego-oriented goals might be more relevant for motor skill learning and retention (Meira & Fairbrother, 2018), they are also linked with negative cognitive responses to failure and maladaptive behavior when one doubts their performance (Pensgaard & Roberts, 2003; Lochbaum & Roberts, 1993). On the other hand, their task-oriented counterparts that emphasize the intrinsic value of task involvement have a greater impact on developing positive athlete self-perceptions (e.g., Lochbaum et al., 2016; Machida et al., 2011). In that regard,

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Côté and Vierimaa (2014) posit that the gradual introduction of ego-oriented goals is recommended in the transition to the specialization phase, but not at the expense of task-oriented goals development.

This study also has some limitations. First, it was based on a convenient sample of participants mastering specific physical skills. Therefore, the generalization of results to other sports areas and conditions that differ from those listed above should be approached with caution. Second, the results indicate that a combination of goal setting and feedback is successful when working with younger swimmers. However, more research must be conducted to determine whether public goal monitoring is more successful than private feedback. The lack of significant differences between the private monitoring and control conditions could be attributed to our small sample size. In a well-powered study, public goal monitoring might also contribute to significant performance increases. Although statistically significant, the differences between the two methods are weak to moderate, and further research is needed to replicate the findings of this paper. Furthermore, as previously stated, public goal monitoring might have been more effective than its private counterpart due to the characteristics of the study sample. For example, private feedback could be useful when applied to older athletes. Third, this study did not consider the long-term effects of goal-based interventions. The effects of this intervention may not lead to a long-term behavior change. Also, behavior maintenance may not occur when returning to baseline conditions (Kim et al., 2016; Brobst & Ward, 2002). For these reasons, more complex experimental and longitudinal designs need to examine the effectiveness of goal-based interventions. Fourth, this study failed to account for external factors relevant to the motivation of young athletes. Parents greatly influence the sport experience of a child by providing financial (Holt et al., 2011) and emotional support (Elliot & Drummond, 2017; Ullrich-French & Smith, 2006), as well as having significant influence in managing their child's sports activities by providing instrumental support (Côté, 1999). It is possible that parents contributed to the decision to attend for some participants.

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Future studies should aim to test the effectiveness of these interventions for older individuals and in other sports environments. Furthermore, girls seem to respond better to non-normative evaluation characteristic of private goal monitoring (Murcia et al., 2008; Cooper-Patrick et al., 1999). Future work might build on this study by examining how young athletes' gender interacts with the characteristics of goal monitoring. Finally, it was previously specified that public goal monitoring might also adversely affect young athletes' development. Therefore, it is necessary to study whether combining public goal monitoring with methods derived from different motivational theories diminishes the disadvantages of this intervention. More complex research designs might also provide an opportunity to integrate theoretical knowledge and improve the coaching practice. This paper aimed to determine the contribution of goal progress monitoring interventions to athletes' behavior change and performance improvement. Examining the relationship of such interventions with other individual differences variables was out of the scope of this study. Since the situational motivational climate interacts with dispositional goal orientations (Elliot & McGregor, 2001), future work should aim to understand the relevance of the psychological characteristics of young athletes for goal progress monitoring interventions.

## Conclusion

Interventions based on goal-setting theory should be used in sports and recreation. This study found that the application of goal progress monitoring contributed to an increase in average training attendance relative to control participants. More specifically, public goal monitoring produced the best results. Private feedback, on the other hand, had a less promising effect. Goal and performance posting led to higher average attendance and better swimming performance than private feedback and the control condition. The results indicate that the situation (private vs. public) in which progress monitoring occurs impacts goal-directed behavior.

### *Conflict of interest*

We have no conflicts of interest to disclose.

### Data availability statement

The dataset used in this study can be accessed at <https://osf.io/7pkfq/>.

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Research Article

# Procena kvaliteta koroditeljskog odnosa u porodicama koje očekuju bebu: adaptacija upitnika „Snaga roditeljskog saveza (PAM)“

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## REZIME

U okviru roditeljskih uloga partneri ostvaruju poseban oblik saradnje – koroditeljstvo koji je usmeren na osmišljavanje, upravljanje i realizaciju zajedničke brige o deci. Kvalitet koroditeljskog odnosa značajan je za kvalitet roditeljstva, ali za i razvoj deteta, pre svega u domenu socio-emocionalnog razvoja, bihejvioralnih i relacijskih kompetencija deteta. Longitudinalne studije ukazuju da je kvalitet koroditeljskog odnosa prenatalno dobar prediktor ovog odnosa nakon rođenja deteta. U okviru srpskog govornog područja do sada nisu rađena istraživanja u oblasti koroditeljskih odnosa u prenatalnom periodu, te u skladu sa tim ne postoji adekvatan instrument procene. Uzimajući u obzir značaj istraživanja ove oblasti za razvoj teorije i prakse razvojne psihologije i psihologije porodice prepoznata je potreba za adaptacijom upitnika koji bi služio istraživačima i praktičarima. Cilj ovog rada je da se prikaže faktorska struktura i osnovne psihometrijske karakteristike adaptirane verzije instrumenta Snaga roditeljskog saveza (Parenting alliance measure, Abidin & Konold 1999) na uzorku budućih roditelja. Uzorak je činilo 342 ispitanika, odnosno 171 par koji očekuje prvo dete. Faktorskom analizom izolovana su tri faktora imenovana kao: međusobna podrška koroditelja, obostrana uključenost koroditelja i zajedničke vrednosti koroditelja. Kronbahova alfa za skalu u celini iznosi 0.95, dok za pojedinačne subskale iznosi: 0.89 za subskalu kvalitet međusobne podrške, .89 za subskalu kvalitet obostrane uključenosti roditelja i .77 za subskalu zajedničkih vrednosti

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koroditelja. Adaptirani upitnik je pokazao dobre metrijske karakteristike, čime je dobijen reprezentativan instrument za procenu prenatalne koroditeljske saradnje.

*Ključne reči:* koroditeljska saradnja, PAM upitnik, tranzicija ka roditeljstvu

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## Uvod

Roditeljstvo se u teorijama definiše kao porodični subsistem koji je povezan, ali kvalitativno drugačiji od partnerskog (Milojković i sar., 1997). To je izvršni sistem, u kom učestvuju roditelji, a kao centralna, izdvaja se njihova uloga „ko-upravljača“ interakcijom i uključivanjem članova porodice sa ciljem osiguranja kvaliteta odnosa među članovima porodice i dobrobiti svakog člana (Minuchin, 1974). U okviru roditeljskih uloga partneri ostvaruju poseban oblik saradnje – koroditeljstvo koji je usmeren na osmišljavanje, upravljanje i realizaciju zajedničke brige o deci. Zadaci ove relacije tiču se pre svega podizanja i socijalizacije dece, adekvatne brige o njima, postavljanja adekvatnih granica i pravila, ali i međusobne podrške u građenju vaspitnih stavova, doživljaja roditeljstva i deteta, kao i odnosa sa detetom za oba roditelja.

Istraživanja koroditeljskog odnosa poseban značaj dobijaju promenom paradigme koju je donela sistemska porodična teorija naglašavajući značaj posmatranja funkcionisanja cele porodice, ali i njenih manjih celina (subsistema) na razvoj i funkcionisanje svakog njenog člana. Na taj način, razvoj deteta ne sagledava se više samo linearno kroz efekte roditeljske uloge majke ili oca, nego se kvalitet roditeljske uloge sagledava kroz cirkularne interakcije koje roditelji ostvaruju kao par udružujući se u roditeljski savez (McHale et al., 2004).

Kvalitet koroditeljskog odnosa značajan je za kvalitet roditeljstva oba roditelja, ali za i razvoj deteta, pre svega u domenu socio-emocionalnog razvoja, bihevioralnih i relacijskih kompetencija deteta (Belsky et al., 1996; McHale et al., 1999; Frosch et al., 2000; Schoppe et al., 2001; Von Klitzing & Buergin, 2005; Favez et al., 2012). Sve veći broj istraživanja ističe da upravo koroditeljski odnos, a ne odnos roditelj-dete (McHale & Cowan, 1996; Feinberg, 2003; McHale et al., 2004; Teubert & Pinquart, 2010) ili kvalitet partnerskog odnosa (McHale & Rasmusen, 1998; McHale & Fivaz-Depeursinge, 1999; Feinberg et al., 2007), ima najznačajniji prediktivni doprinos za razvoj deteta.

Nakon velikog broja istraživanja u polju koroditeljstva u različitim razvojnim fazama porodice, istraživači su usmerili fokus na pitanje kada nastaje koroditeljski odnos, odnosno možemo li o njemu govoriti i pre rođenja deteta? Rezultati istraživanja na ovo pitanje dali su potvrđan odgovor. Tokom trudnoće partneri se pripremaju za nove uloge i novu-trijadnu porodičnu strukturu (Von Kliezing et al.,1999). Longitudinalne studije ukazuju da je kvalitet koroditeljskog odnosa prenatalno dobar prediktor ovog odnosa nakon rođenja deteta. Činjenicu da postoji kontinuitet u koroditeljskom odnosu pre i postnatalno (McHale et al, 2004; Altenburger et al., 2014) može objasniti ideja da postoje mentalne reprezentacije koroditeljstva koje se formiraju u toku trudnoće, a verovatno i ranije u životu (Kuersten-Hogan, 2017).

Imajući u vidu značaj koroditeljskog odnosa za razvoj deteta, kao i činjenicu da se on razvija već tokom trazičije ka roditeljstvu, procena ovih ranih obrazaca interakcije među koroditeljima može biti od velikog praktičnog značaja, prvenstveno u kontekstu skrininga parova koji su u riziku za razvoj disfunkcionalnih porodičnih obrazaca, te kreiranje preventivnih programa u cilju unapređenja kvaliteta porodičnih odnosa.

### Procena koroditeljskog odnosa u periodu trazičije ka roditeljstvu

Istraživanja u oblasti koroditeljske saradnje u prenatalnom periodu novijeg su datuma. Dostupni izvori ukazuju da su u njima korišćene tri tehnike procene: upitnik, intervju i igra uloga prilikom koje obučeni procenjivači kodiraju segmente ponašanja značajne za procenu koroditeljske saradnje.

Kada je reč o proceni koroditeljske saradnje putem upitnika, u dosadašnjim studijama korišćena je „Skala koroditeljskog odnosa” (Feinberg et al., 2012), koja je za potrebe procene u prenatalnom periodu adaptirana za uzorak očeva i nosi naziv „Skala koroditeljskog odnosa- prenatalna verzija za očeve” (CRS-FPV; Pinto, Figueiredo & Feinberg, 2019). Adaptirana prenatalna verzija ima 30 ajtema, a odgovori se daju na 6-stepenoj skali Likertovog tipa. Sadrži četiri subskale: koroditeljska podrška, koroditeljski konflikt, koroditeljsko

(ne)slaganje, podcenjivanje koroditelja. Pouzdanost skale se kreće od  $\alpha$  .87 do .89 (Pinto et al., 2019).

Intervju za procenu koroditeljskog odnosa osmislio je 1998. godine McHale, a kasnije je korišćen u više istraživanja (McHale et al., 2004, McHale, Kuersten-Hogan & Rao, 2004). Svrha ovog intervjuja je da probudi sećanja koje ispitanik ima u odnosu na koroditeljsku saradnju sopstvenih roditelja; proceni svest ispitanika o poznavanju koroditeljskog odnosa u porodici porekla svog partnera i proceni kvalitet ideja o koroditeljskom odnosu partnera. Do kraja intervjuja, potrebno je pribaviti podatke koji se odnose na percepciju ispitanika na dimenziji kohezija nasuprot animozitet u odnosu na koroditeljski odnos sopstvenih roditelja; zatim o idejama ispitanika koje on tokom tranzicije ka roditeljstvu razvija o sopstvenom učešću u koroditeljskoj saradnji sa partnerom; te stepenu znanja o tome koliko ispitanik poznaje ove ideje kod svog partnera kao i količini i kvalitetu vremena koje partneri posvećuju tokom trudnoće razgovoru na temu izgradnje sopstvenog koroditeljskog odnosa, ideji koliko ispitanik vidi svog partnera kao budućeg roditelja i ideji o zajedništvu tokom intervjuja (McHale et al, 2004).

Tehnika igra uloga korišćena je u cilju ispitivanja bihevioralnih komponenata koroditeljskih reprezentacija. Prvo takvo istraživanje datira iz 2006. godine kada su Carneiro i sar. osmislili istraživačku proceduru sa namerom da ponude mogućnost prenatalne procene koroditeljskog odnosa. Ova procedura validirana je na Švajcarskom (Carneiro et al., 2006), Italijanskom (Simonelli et al., 2012) i Američkom uzorku (Altenburger et al., 2014), a nakon validacionih studija ova procedura korišćena kao tehnika procene u više istraživanja iz ove oblasti (Favez et al., 2012; Altenburger et al., 2014; Schoppe-Sullivan et al., 2014; Kuersten-Hogan, 2017). Pomenuta istraživačka procedura nosi naziv Prenatal Lausanne Trilogue Play (PLTP, Carneiro, Corboz- Warnery & Fivaz-Depeursinge, 2006) i predstavlja adaptaciju originalne Lausanne Trilogue Play (LTP, Fivaz- Depeursinge & Corboz- Warnery, 1999), procedure za procenu koroditeljskog odnosa u porodicama sa bebama uzrasta do godinu dana. Tokom originalne LTP procedure posmatra se interakcija roditelja i bebe u specijalno osmišljenoj zajedničkoj igri, za koju se roditeljima uoči toga daju

instrukcije. Prenatalna verzija adaptirana je tako da se umesto prave bebe koristi lutka, a potom par budućih roditelja dobija zadatak da se angažuje u interakciji sa lutkom uz instrukcije da tokom interakcije probaju da zamisle svoj susret sa realnom bebom. Koroditeljski odnos procenjuje se kroz pet komponenata: koroditeljski kapacitet za igru, struktura igre, intuitivno ponašanje roditelja, kooperacija unutar para i porodična toplina. Cela procedura se snima kamerom. Procena koroditeljskog odnosa skoruje se uz pomoć strukturiranih stavki sa kojima se kodiraju video zapisi.

Pregledom instrumenta korišćenih procenu koroditeljskog odnosa u prenatalnom periodu uočava da je put njihovog nastanka išao u pravcu adaptacije instrumenata korišćenih za procenu istog koncepta postnatalno. U okviru srpskog govornog područja do sada nisu rađena istraživanja u oblasti koroditeljskih odnosa u prenatalnom periodu, te u skladu sa tim ne postoji adekvatan instrument procene. Uzimajući u obzir značaj istraživanja ove oblasti za razvoj teorije i prakse razvojne psihologije i psihologije porodice prepoznata je potreba za adaptacijom upitnika koji bi služio istraživačima i praktičarima.

### Upitnik „Snaga roditeljskog saveza (PAM)“

Na našim prostorima i u okviru srpskog govornog područja do sada je u istraživanjima procene koroditeljske saradnje korišćen upitnik Snaga roditeljskog saveza (Parenting alliance measure, Abidin & Konold 1999). Upitnik se sastoji od 20 tvrdnji čijim sadržajem su prikazani različiti oblici saradnje među roditeljima. U svojoj teorijskoj osnovi ovaj upitnik ima teoriju objektnih odnosa (Weissman & Cohen, 1985) i konceptualizaciju roditeljskog saveza kako je ona shvata: kao protektivni faktor za jačanje samopouzdanja roditelja u roditeljskoj ulozi. Ispitanici na petostepenoj skali procenjuju koliko je za njih karakterističan sadržaj svake tvrdnje. Ova skala je namenjena roditeljima dece od rođenja do kraja adolescencije. Teorijski minimum na skali je 20, a maksimum 100 i skoruje se tako da viši skor govori o izraženijoj tenziji odnosno lošijem kvalitetu, ili snazi roditeljskog saveza.

Koristi se kao jednofaktorska skala, mada autori ne negiraju pojavu drugačije faktorske strukture. Naime, u validacionim studijama opisana su bar po dva faktora, koji se razlikuju po svojoj strukturi za očeve i majke. U oba slučaja izdvajaju se dimenzije koje autori opisuju kao «MI dimenzija» (faktor zasićen percepcijom komunikacije i saradnje među partnerima u odgajanju i vaspitanju deteta) i «JA dimenzija» (faktor zasićen osećanjem poštovanja od strane partnera kod majki, odnosno poštovanja zalaganja, predanosti i procena koje u vaspitnom ponašanju čini partner, kod očeva). Ovakva faktorska struktura uočavana je i na uzorcima istraživanja u našoj zemlji (Mihčić, 2006; Mihčić i sar., 2007; Mihčić i sar., 2009). Autori dozvoljavaju da se pojavi i različita struktura ovih faktora, koja može da potiče od različitih shvatanja roditeljskog saveza u zavisnosti od npr. pola roditelja. Razlike u strukturi mogu da (u kliničkoj i terapijskoj primeni) ukažu na specifičnosti ili polja tenzije funkcionisanju roditeljskog para (Abidin & Konold, 1999). Na našoj populaciji instrument je primenjivan više puta i pokazao je, kao i na ranijim validacionim studijama (Abidin & Konold, 1999), zadovoljavajuće metrijske karakteristike (Mihčić, 2006; Mihčić i sar., 2007; Mihčić i sar., 2009, Mihčić, 2010; Mihčić i sar., 2013), zbog čega je doneta odluka da se adaptacijom ovog upitnika krene putem obezbeđivanja relevantnog instrumenta procene koji bi bio primenjiv u istraživanjima koroditeljskog odnosa u periodu pre rođenja deteta.

Cilj ovog rada je da se prikaže faktorska struktura i osnovne psihometrijske karakteristike adaptirane verzije instrumenta Snaga roditeljskog saveza na uzorku budućih roditelja.

## Metod

### Opis uzorka

Uzorak je činilo 342 ispitanika, odnosno 171 par koji očekuje dete. Deo ispitanika bio je uključen u istraživanje preko poziva na društvenim mrežama (120 parova), dok je deo njih regrutovan preko ginekološko-akušerskih ordinacija i škola za trudnice u Novom Sadu i Beogradu (51 par). Svi ispitanici

su u trenutku popunjavanja upitnika čekali svoje prvo dete. Prosečna starost ispitanica iznosila je 29.84 godine ( $SD = 4.69$ ), dok je prosečna starost ispitanika bila 31.5 godina ( $SD = 5.14$ ). Ispitanice su u proseku u 27. nedelji trudnoće ( $M = 27.12$ ,  $SD = 7.95$ ), u rasponu od 6. do 41. nedelje. U uzorku je najviše i ispitanika i ispitanica sa visokim obrazovanjem (ŽP: 48%, MP: 38%), zatim su sledeći po zastupljenosti oni sa srednjom školom (ŽP = 23.4%, MP: 35.1%), odnosno višom školom (ŽP: 15.2%, MP = 17%) i magistraturom/doktoratom (ŽP: 13.5%, MP = 9%). I ispitanici i ispitanice u najvećem procentu procenjuju svoj materijalni status kao prosečan (ŽP = 80.1%, MP: 77.8%), zatim kao iznad prosečan (ŽP: 16.4%, MP: 19.9%), dok su u vrlo malom procentu zastupljeni oni ispitanici koji svoj materijalni status procenjuju ispodprosečnim (ŽP: 3.5%, MP = 2.3%). Ukupno je 80.7% budućih majki i 90.6% budućih očeva trenutno u radnom odnosu. Skoro dve trećine njih živi u većim gradovima (64.3%), dok je dosta manji procenat njih iz manjih gradova (22.8%) ili sela (12.9%). Ukupno 73.7% ispitanika je u braku, dok ostali žive u vanbračnoj zajednici.

## Procedura

Parovi koji očekuju prvo dete su nakon informisanog pristanka u okviru ginekoloških ordinacija ili online popunjavali upitnike koji su se sastojali od upitnika opštih (socio-demografskih i podataka o trudnoći), kao i adaptirani PAM upitnik. Informisani pristanak je sadržao informacije o cilju istraživanja, načinu popunjavanja, kontaktu autora istraživanja, a anonimnost je osigurana time što su ispitanici zamoljeni da označe upitnike šifrom koja će biti jednaka za oba člana para. Istraživanje je sprovedeno tokom 2021. godine, a odluka da deo uzorka bude prikupljen online bila je uslovljena ograničenošću pristupa trudnicama kao osetljivoj grupi u vreme trajanja epidemioloških mera uvedenih u cilju zaštite od korona virusa. Parovi regrutovani u okviru ordinacija upitnike su popunjavali kod kuće, s obzirom da zbog epidemioloških mera muškarci nisu imali mogućnost dolaska u ordinaciju sa partnerkom.

Istraživanje je odobreno od strane etičke komisije Filozofskog fakulteta u Novom Sadu i predstavlja pripremnu fazu provere metrijskih karakteristika



upitnika koji je planiran za korišćenje u okviru seta upitnika za doktorsku disertaciju pod nazivom „Determinante kvaliteta koroditeljskog odnosa u prenatalnom periodu“.

### Adaptacija upitnika „Snaga roditeljskog saveza“

Prilikom adaptacije upitnika za procenu kvaliteta formiranja koroditeljske saradnje u prenatalnom periodu, najveći broj stavki iz originalnog upitnika je zadržan sa korekcijom tako da se stavke umesto refleksije na aktuelni odnos, odnose na ideje o organizaciji budućeg odnosa. Primer ovako adaptiranih stavki je sledeći „ Moj suprug i ja bismo naše dete opisali jednako“ u *prenatalnoj* verziji glasi „Moj partner i ja zamišljamo našu bebu veoma slično“.

Pored toga, dodato je još osam stavki koje se odnose na specifičnosti planiranja podele posla oko bebe i razvoja osećaja zajedništva tokom trudnoće, poput stavki „ Kad razmišljam o nama kao roditeljima, tačno znam ko bi se kako ponašao u igri sa bebom“ , „Moj partner/ka i ja uživamo kada zajedno gledamo bebu putem ultrazvuka“, „I meni i partneru/ci je važno da zajedno pripremamo stvari za bebu“. Dodate stavke bazirane su na rezultatima predhodnih istraživanja koja su ukazala na ponašanja budućih roditelja koja se mogu smatrati relevantnim pokazateljima prisutnosti ideja o organizaciji koroditeljske saradnje.

Ovako kreiran instrument ima 28 stavki. Format odgovaranja je zadržan i čini ga petostepena skala procene. Viši skor ukazuje na veće slaganje sa stavkom, a ukupni viši skor- kvalitetnije funkcionisanje roditeljskog saveza u periodu tranzicije u roditeljstvo.

## Rezultati

### Faktorska struktura adaptiranog PAM upitnika

Za proveru faktorske strukture prenatalnog upitnika „Snaga roditeljskog saveza“ korišćena je eksplorativna faktorska analiza, uz primenu metode glavnih komponenti, i zadatu Promax rotaciju faktora. Za ekstrakciju broja faktora je pored Gutman-Kajzerovog kriterijuma, testirana i Hornova paralelna

analiza, korišćenjem programa FACTOR 9.2 (Lorenzo-Seva & Ferrando, 2013). U pitanju je metoda koji polazi od pretpostavke da u analizi treba zadržati samo one faktore čija je vrednost karakterističnog korena veća od vrednosti karakterističnog korena koji je moguće dobiti na osnovu slučajnih podataka sa analognim karakteristikama (Subotić, 2013). U prethodnim analizama se ova metoda ekstrakcije broja faktora, pokazala superiornijom u poređenju sa metodama poput Gutman-Kajzerovog kriterijuma ili scree-dijagrama (Subotić, 2013).

Budući da se eksplorativna faktorska analiza sprovodi na matrici interkorelacija, da bi se proverilo da li su stavke međusobno značajno korelirane korišćen je Bartlett-ov test sferičnosti, čija je statistička značajnost jedan od preduslova za sprovođenje dalje analize. Statistička značajnost Bartlett-ovog test sferičnosti ( $\chi^2 = 6224.53$ ;  $p < .01$ ) ukazuje nam na to, da ima smisla da se podaci podvrgnu eksplorativnoj faktorskoj analizi. Kaizer-Mayer-Olkin (KMO) mera reprezentativnosti u ovom istraživanju iznosi .95, čija vrednost ukazuje na adekvatnost uzorkovanja, čime se sugerše da je opravdano pristupiti daljoj analizi.

Na osnovu rezultata Hornove paralelne analize, broj faktora koji najbolje opisuje latentnu strukturu upitnika je tri (Tabela 1). Na osnovu Gutman-Kajzerovog kriterijuma se izdvaja četiri faktora, međutim na osnovu rezultata Hornove paralelne analize možemo uočiti da poslednji faktor, sa karakterističnim korenom nešto iznad 1, ima nižu vrednost od karakterističnog korena koji je dobijen na osnovu slučajnih podataka u bazi podataka sa analognim karakteristikama (po broju ispitanika i broju ajtema). Osim toga, četvrti faktor je zasićen sa samo dva ajtema, od kojih oba imaju visoka kros-zasićenja na drugim faktorima.

Trofaktorsko rešenje objašnjava 57.92% varijanse upitnika. Svi komunaliteti se kreću u rasponu između .38 i .79, što sugerše da nije potrebno izostaviti nijedan ajtem na osnovu kriterijuma koji bi se odnosio na niske komunalitete.

**Tabela 1**

Rezultati Gutman-Kajzerovog kriterijuma i Hornove paralelne analize

| Br. Faktora | Karakteristični koren | % objašnjene varijanse | % kumulativne varijanse | AS karakterističnog korena | random | Odluka   |
|-------------|-----------------------|------------------------|-------------------------|----------------------------|--------|----------|
| 1           | 12.95                 | 46.25                  | 46.25                   | 2.78                       |        | Prihvati |
| 2           | 1.92                  | 6.84                   | 53.09                   | 2.14                       |        | Prihvati |
| 3           | 1.35                  | 4.84                   | 57.92                   | 1.53                       |        | Prihvati |
| 4           | 1.00                  | 3.59                   | 61.51                   | 1.24                       |        | Odbaciti |
| 5           | .97                   | 3.46                   | 64.97                   |                            |        |          |
| 6           | .89                   | 3.19                   | 68.16                   |                            |        |          |

Uvidom u matricu sklopa (Tabela 2), može se registrovati da jedan ajtem nema značajna zasićenja ni na jednom faktoru, zatim da tri ajtema imaju značajna kros-zasićenja na još jednom faktoru i da dva ajtema imaju značajna kros-zasićenja na sva tri faktora. Prvo je iz analize izostavljen ajtem bez značajnih zasićenja (ajtem broj 16), kao i dva ajtema sa zasićenjima na svim faktorima (ajtem 26 i 24). Nakon toga je još dva puta sprovedena analiza, prvo sa izostavljanjem ajtema 3, nakon čega se značajno kros-zasićenje registrovalo samo u slučaju ajtema 10, nakon čega je i taj ajtem izostavljen. Nakon izostavljanja ovih pet ajtema, na osnovu već navedenih kriterijuma, dobijeno je faktorsko rešenje bez kros-zasićenja. Trofaktorsko rešenje, nakon izostavljanja problematičnih ajtema objašnjava 66.77% varijanse upitnika. Svi komunaliteti su i dalje iznad vrednosti 0.30, tačnije, kreću se u rasponu od .39 do .77. U pitanju su tri faktora koja umereno pozitivno koreliraju. Korelacije među faktorima se kreću u rasponu između .57 i .68

**Tabela 2**

Matrica sklopa: pre i nakon izostavljanja ajtema sa visokim kros-zasićenjima

|        | Pre izostavljanja ajtema sa visokim kros-zasićenjima |           |            | Nakon izostavljanja ajtema sa visokim kros-zasićenjima |           |            |
|--------|--|-----------|------------|--|-----------|------------|
|        | I faktor   | II faktor | III faktor | I faktor   | II faktor | III faktor |
| PAM_20 | .81  |           |            | .99  |           |            |
| PAM_12 | .77  |           |            | .73  |           |            |
| PAM_13 | .70  |           |            | .72  |           |            |
| PAM_11 | .69  |           |            | .66  |           |            |
| PAM_2  | .67  |           |            | .63  |           |            |
| PAM_21 | .67  |           |            | .74  |           |            |
| PAM_4  | .62  |           |            | .67  |           |            |
| PAM_6  | .59  |           |            | .64  |           |            |
| PAM_10 | .56  | .39       |            |  |           |            |
| PAM_3  | .47  |           | .38        |  |           |            |
| PAM_9  | .37  |           |            | .45  |           |            |
| PAM_18 | .33  |           |            | .34  |           |            |
| PAM_23 |  | .85       |            |  | .91       |            |
| PAM_1  |  | .83       |            |  | .89       |            |
| PAM_7  |  | .79       |            |  | .88       |            |
| PAM_25 |  | .72       |            |  | .73       |            |
| PAM_5  |  | .67       |            |  | .75       |            |
| PAM_14 |  | .61       |            |  | .68       |            |
| PAM_22 | .33  | .53       |            |  | .60       |            |
| PAM_24 | -.42   | .49       | .41        |  |           |            |
| PAM_15 |  | .43       |            |  | .48       |            |
| PAM_16 |  |           |            |  |           |            |
| PAM_27 |  |           | .79        |  |           | .86        |
| PAM_19 |  |           | .76        |  |           | .82        |
| PAM_8  |  |           | .74        |  |           | .87        |
| PAM_28 |  |           | .71        |  |           | .79        |
| PAM_17 |  |           | .70        |  |           | .76        |
| PAM_26 | -.37   | .55       | .58        |  |           |            |

Prvi faktor obuhvata ajteme koji se odnose na *međusobnu podršku koroditelja*, odnosno one ajteme koji uključuju međusobna uverenja o tome da će biti dobri roditelji, kao i dobar tim u odgajanju deteta, ali i različite ajteme koji se odnose na zamišljene zajedničke aktivnosti oko deteta. Drugi faktor se može nazvati *obostranom uključenošću koroditelja* i odnosi se na percepciju oba partnera o zainteresovanosti njihovog partnera za brigu oko deteta, kao i o pripremnim aktivnostima koje sprovodi u kontekstu skorog dolaska bebe. Treći faktor se odnosi na *zajedničke vrednosti koroditelja*, i odnosi se na iste vrednosti i ciljeve u procesu vaspitanja deteta.

**Tabela 3**

*Deskriptivna statistika i pouzdanost upitnika i subskala*

|                       | Teorijski raspon | Opaženi raspon | M    | SD  | Sk    | Ku    | $\alpha$ |
|-----------------------|------------------|----------------|------|-----|-------|-------|----------|
| Međusobna podrška     | 1-5              | 1.40 – 5.00    | 4.69 | .50 | -3.13 | 13.63 | .892     |
| Obostrana uključenost | 1-5              | 1.38 – 5.00    | 4.50 | .59 | -1.91 | 5.15  | .891     |
| Zajedničke vrednosti  | 1-5              | 1.00 - 5.00    | 4.59 | .60 | -2.55 | 9.13  | .770     |
| PAM total             | 1-5              | 1.30 – 5.00    | 4.60 | .49 | -2.92 | 13.33 | .945     |

Nakon isključivanja pet stavki, adaptirani upitnik „Snaga roditeljskog saveza“ ima 23 ajtema, dok ispitanici daju odgovore na 5-stepenoj skali Likertovog tipa koja se kreće od 1 (izričito se ne slažem) do 5 (u potpunosti se slažem). Viši skor govori o boljoj percepciji koroditeljske saradnje tokom tranzicije u roditeljstvo. Koroditeljska saradnja je koncipirana kao konstrukt koji se oslanja na međusobnu podršku između budućeg oca i majke, uključenost oba buduća roditelja i zajedničke vrednosti roditelja vezane za staranje o deci.

Na uzorku ovog istraživanja Kronbahova alfa za skalu u celini iznosi .95, dok za pojedinačne subskele iznosi: .89 za subskalu kvalitet međusobne podrške, .89

za subskalu kvalitet obostrane uključenosti roditelja i .77 za subskalu zajedničkih vrednosti koroditelja.

Za testiranje polnih razlika na subskalama PAM upitnika, kao i na skali u celini, primenjena su četiri t-testa za nezavisne uzorke. Statistički značajne polne razlike se registruju samo u slučaju subskale *Obostrana uključenost* ( $t(339) = -3.49, p < .01$ ), na kojoj osobe muškog pola procenjuju veće skorove ( $AS = 4.59, SD = .53$ ), od osoba ženskog pola ( $AS = 4.38, SD = .62$ ).

**Tabela 4**

Polne razlike na subskalama PAM upitnika

|                       | Ženski pol |           | Muški pol |           | <i>t</i> | <i>df</i> | <i>p</i> |
|-----------------------|------------|-----------|-----------|-----------|----------|-----------|----------|
|                       | <i>AS</i>  | <i>SD</i> | <i>AS</i> | <i>SD</i> |          |           |          |
| Međusobna podrška     | 4.69       | .49       | 4.67      | .51       | .42      | 340       | .67      |
| Obostrana uključenost | 4.38       | .62       | 4.59      | .53       | -3.49    | 339       | .00      |
| Zajedničke vrednosti  | 4.59       | .58       | 4.58      | .61       | .16      | 339       | .87      |
| PAM model             | 4.56       | .49       | 4.63      | .48       | -1.27    | 339       | .20      |

## Diskusija

Osnovni cilj ovog istraživanja bio je provera strukture i metrijskih karakteristika upitnika za procenu koroditeljske saradnje adaptiranog za procenu tokom prenatalnog perioda, odnosno perioda tranzicije ka roditeljstvu. Ova relativno mlada istraživačka oblast još uvek oskudeva sa instrumentima procene, a naročito na našem govornom području gde do sada nije bilo istraživanja u domenu prenatalnih reprezentacija koroditeljskog odnosa. Sa druge strane, istraživanja koja govore u prilog tome da dinamika funkcionisanja budućih roditelja tokom pripreme za roditeljstvo u velikoj meri oslikava način na koji će roditeljski par funkcionisati nakon rođenja deteta (McHale et al., 2004; Altenburger et al., 2014), ukazuje na to da se veoma rano, već i tokom trudnoće, mogu prepoznati obrasci kako oni koji govore u prilog funkcionalnosti roditeljskog para, tako i oni disfunkcionalni. Navedeno ukazuje na značaj rane procene, te mogućnosti rane intervencije i prevencije razvoja disfunkcionalnih porodica.

Pregledom stranih istraživanja, uočava se da su instrumenti korišćeni za prenatalnu procenu koroditeljstva nastajali adaptacijom instrumenata dizajniranih za postnatalnu upotrebu, te je adaptacija upitnika opisanog u ovom radu nastala po ugledu na ove ustaljene prakse. Kako je upitnik „Snaga roditeljskog saveza“ (Parenting Alliance Measure, PAM, Abidin i Konold, 1999) bio preveden i korišćen u većem broju istraživanja u našoj zemlji (Mihić, 2006; Mihić i sar., 2007; Mihić i sar., 2009, Mihić, 2010; Mihić i sar., 2013), odlučeno je da on bude polazna osnova za prenatalnu adaptaciju.

Primenom originalnog upitnika na različitim uzorcima roditelja izdvajala su se uglavnom jedan do dva faktora, dok autori su autori upitnika ostavili mogućnost da broj faktora varira (Abidin & Konold, 1999). Adaptacijom upitnika za prenatalni period, originalnom upitniku dodato je osam novih stavki koje u odnosu na teorijske modele o prenatalnim reprezentacijama koroditelskih uloga ukazuju na postojanje ideja (mentalnih reprezentacija) partnera o njihovom budućem odnosu. Nakon analiza izdvojeno je 23 ajtema koji objašnjavaju 66.77% varijanse.

Analiza pouzdanosti novonastalog instrumenta ukazuje da on poseduje zadovoljavajuće metrijske karakteristike kako kada se posmatra skala u celini, tako i kada se posmatraju pojedinačne subskale izdvojene eksplorativnom faktorskom analizom.

Faktorska struktura koja je uočena analizom adaptiranog upitnika izdvaja tri značajne komponente koje definišu kvalitet koroditelskog odnosa: *međusobnu podršku koroditelja, obostranu uključenost koroditelja i zajedničke vrednosti koroditelja.*

Međusobna podrška koroditelja iskazana je kroz stavke poput: „Moj partner/ka veruje da ću ja biti dobar roditelj“, Mislim da ćemo moj partner/ka i ja biti dobar roditeljski tim“ „Tokom trudnoće moj partner/ka mi stalno pokazuje da ima poverenja u mene kao budućeg roditelja“, koji ukazuju na poverenje partnera u odnosu na predstojeće roditeljske uloge iz kojeg proizilazi spremnost za međusobnu podršku.

Obostrana uključenost koroditelja uključuje stavke poput: „Moj partner/ka uživa u vremenu koje provodi planirajući ili pripremajući se za bebu“, „Moj

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partner/ka posvećuje dosta pažnje pripremi za dolazak naše bebe” kroz koje se uočava percepcija ispitanika u odnosu na kvalitet partnerove uključenosti u aktivnosti koje se odnose na pripremu za predstojeće roditeljstvo. Ovo je ujedno i jedini faktor na kojem se u ovom istraživanju registruju statistički značajne razlike u odnosu na pol, pri čemu ispitanici muškog pola pokazuju veći skor.

Zajedničke vrednosti koroditelja iskazane su kroz stavke poput: „Moj partner/ka i ja se slažemo oko toga šta će našem detetu biti, a šta neće biti dozvoljeno”, „Moj partner/ka i ja imamo iste ciljeve kada je u pitanju naše dete”, „Moja partner/ka i ja se uglavnom slažemo u odnosu na to kako ćemo vaspitati naše dete” i ukazuju na stepen slaganja roditeljskog para u odnosu na brigu o detetu.

Ova struktura u velikoj meri podržava teorijske postavke koje razvoj koroditeljstva u prenatalnom periodu vide kao proces u kojem parovi tokom trudnoće najpre razvijaju kapacitet za trijadni odnos koji se definiše kao mogućnost budućih roditelja da vide sebe kao porodicu bez isključivanja sebe ili partnera iz odnosa sa detetom (Von Klitzing & Burgin, 2005). Pored toga, formiranje trijade traži od svakog partnera da redefiniše i upotpuni svoj identitet prihvatanjem identiteta oca ili majke, te da razvije nove kapacitete za intimnost sa partnerom i prepoznavanje novorazvijenih potreba, vezanih pre svega za partnerovu ulogu roditelja i razvoj kompetencija za nju, te redefiniše očekivanja od braka, pre svega vezano za seks, intimnost i komunikaciju (Mihić, 2010). Razvojem kapaciteta za trijadni odnos, partneri razvijaju i sistem međusobne podrške u ulozi roditelja što je prvi od pokazatelja kvaliteta njihove saradnje u novim ulogama.

Ova međusobna podrška predstavlja osnovu za drugu komponentu koroditeljskog odnosa- *obostranu uključenost* oba partnera. Istraživanja ukazuju da uključenost oba partnera, odnosno interesovanje i inicijativa u svim aspektima pripreme za roditeljstvo, ostvaruju značajan temelj posvećenosti detetu i roditeljskoj ulozi, kao i negovanju roditeljskog saveza (Marsiglio, 2004; ). Značaj podrške partnera za obostrano uključivanje u roditeljstvo naročito je istican u jednom korpusu istraživanja koji je ukazivao



na to da se majke godinama u velikom broju društava smatraju „dominantnim starateljima“, dok je uloga oca u značajnoj meri bila regulisana tzv. „regulatorskim ponašanjem majke“ odnosno količinom njene podrške i podsticaja koje je davala partneru u uključivanju u roditeljstvo (Schoppe-Sullivan et al., 2008; Shoppe-Sullivan et al., 2014). Takva istraživanja ističu veliki značaj uključenosti oca na kvalitet porodičnih odnosa i ukazuju da je muškarac koji je posvećen trudnoći svoje partnerke više uključen u sve događaje koje ona donosi, te se na taj način razvija njegova privrženost koja će osigurati da on ostane uključen u porodični život i nakon rođenja deteta (Marsiglio, 2004; Cook et al., 2005).

Treći izolovani faktor *zajedničke vrednosti* u koroditeljstvu takođe je teorijski potkrepljen kao značajan u definisanju kvaliteta koroditeljskog odnosa. Veća sličnost među partnerima u kontekstu stavova i očekivanja u odnosu na roditeljske uloge smatra se protektivnim činiocem u periodu tranzicije ka roditeljstvu. Studije su potvrdile benefit koji na partnerski odnos imaju porodice u kojima su partneri usaglašeni u odnosu na roditeljske uloge (npr. u odnosu na podelu obaveza oko deteta ili u odnosu na to kako će život izgledati kada se beba rodi) (Cowan & Cowan, 1995; Ruble et al., 1988, Goldberg & Perry-Jenkins, 2004; Harwood et al., 2007; Lawrence et al., 2007). Dobijeni podaci upućuju da postoje validne osnove za dalju upotrebu upitnika u istraživanjima iz ove oblasti, koja su izuzetno značajna s obzirom na činjenicu da kvalitet koroditeljskog odnosa tokom tranzicije ka roditeljstvu u velikoj meri predviđa kako će se roditelji adaptirati u novim ulogama nakon rođenja bebe (McHale et al., 2004; Altenburger et al., 2014), a samim tim i koliki će biti nivo funkcionalnosti cele porodice s obzirom na značaj koji kvalitet roditeljskog saveza ostvaruje u odnosu na razvoj deteta (Von Klitzing & Burgin, 2005; McHale, 2007; Favez et al., 2012).

Prenatalni skrining funkcionalnosti roditeljske saradnje koji bi bio omogućen ovim upitnikom pružio bi mogućnost identifikacije parova koji su u riziku za razvoj disfunkcionalnih porodičnih obrazaca, te daljeg organizovanog kliničkog rada u ovoj oblasti, kao i preventivnih programa za podsticanje i održavanje dobrih praksi u okviru porodičnog sistema. Programi namenjeni podršci koroditeljstvu dokumentuju da ovakav vid podrške porodici,

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organizovan već tokom perioda tranzicije ka roditeljstvu, ostvaruje pozitivne efekte u odnosu na kvalitet partnerskog odnosa, roditeljstva, smanjenja stresa i promocije mentalnog zdravlja oba roditelja ostvarujući na taj način značajan doprinos razvoju funkcionalnih porodičnih odnosa (Cowan & Cowan, 1995; Petch et al., 2012; Feinberg et al., 2016).

Pored toga, s obzirom na podatak da do sada nisu rađena istraživanja u ovoj oblasti u okviru našeg govornog područja, primena ovog upitnika mogla bi predstavljati podstrek budućim istraživačima u širenju teorijskih saznanja u oblasti razvoja porodica.

Uvidom u rezultate koje su ispitanici u okviru ovog istraživanja postigli na adaptiranom PAM upitniku može se uočiti da je stepen njihove koroditeljske saradnje na visokom nivou, s obzirom da su prosečne vrednosti uzorka na svim stavkama ovog upitnika 4.61 od maksimalnih 5. S obzirom da su uzorak činili ispitanici koji su dobrovoljno odgovorili na poziv za učešće u istraživanju, pretpostavlja se da se radi o visokofunkcionalnim parovima koji se odgovorno i angažovano pripremaju za roditeljstvo. Podatak o uključenosti budućeg oca u pripremu za roditeljstvo u istraživanjima se pokazuje kao protektivni činilac u adaptaciji para na izazove koje donosi tranzicija ka roditeljstvu (Marsiglio 2004, Cook et al., 2005), pa uzimajući u obzir da su u okviru ovog istraživanja kod muških ispitanika uočava statistički značajna razlika na subskali obostrana uključenost takođe govori u prilog visokofunkcionalnih parova obuhvaćenih uzorkom ovog istraživanja.

Imajući u vidu da varijable poput ličnog psihološkog distresa budućih roditelja, nedostatak socijalne podrške tokom tranzicije ka roditeljstvu, kao i konfliki u partnerskim odnosima mogu doprineti otežanoj adaptaciji na (ko)roditeljstvo (Belsky & Rovine, 1990; Cowan & Cowan, 1992) preporuka za dalja istraživanja je planiranje uzorka koji bi obuhvatio i parove sa navedenim faktorima rizika, te pružio mogućnost daljeg istraživanja u ovoj oblasti.

Ograničenja ovog istraživanja odnose se pre svega na karakteristike uzorka i način prikupljanja podataka. Naime, s obzirom da je veći deo uzorka sakupljen online, kao i da su parovi upitnike popunjavali samostalno kod kuće ne postoji potpuna sigurnost da su ispitanici zaista zasebno popunjavali upitnike, što

može donekle uticati na validost i pouzdanost procene. Takođe, dobijeni rezultati ukazuju da su uzorak činili većinom visokofunkcionalni parovi, motivisani da aktivno učestvuju u procesu pripreme za roditeljstvo, što je moglo uticati da distribucija uzorka donekle odstupa od normalne. Zato bi u narednim istraživanjima trebalo proveriti da li bi povećanjem varijabilnosti uzorka i obuhvatom i onih parova čiji partnerski odnos, porodične i životne okolnosti nisu funkcionalni i protektivni došlo do drugačije distribucije ispitanika u odnosu na ispitivani konstrukt. Dalje, broj ispitanika u ovom uzorku nije bio dovoljno velik da bi omogućio testiranje polnih razlika u odnosu na faktorsku strukturu instrumenta, što je podatak koji bi mogao da bude relevantan u razumevanju uticaja polnih razlika na shvatanje koroditeljskog odnosa. Narednim istraživanjima bilo bi korisno proveriti i eksternu validnost ovog upitnika.

## Zaključak

Kvalitet koroditeljskog odnosa u prenatalnom periodu ističe se kao dobar prediktor razvoja porodičnih odnosa, te bi skrining kvaliteta koroditeljske saradnje u periodu pripreme za roditeljstvo bio značajan doprinos detekciji potencijalno disfunkcionalnog funkcionisanja parova koji čekaju bebu, čime bi bilo omogućeno planiranje psiholoških programa koji bi imali za cilj da deluju na faktore rizika u ranoj fazi i time preveniraju razvoj disfunkcionalnih porodičnih obrazaca.

Rezultati ovog istraživanja ukazuju da adaptirani upitnik pokazuje zadovoljavajuće metrijske karakteristike, te da izolovani faktori potkrepljuju teorijski model razvoja prenatalnih reprezentacija koroditeljskog odnosa. Kako je ovo prvo istraživanje sprovedeno u cilju provere metrijskih karakteristika adaptiranog PAM upitnika, preporuka je da naredna istraživanja nastoje da prevaziđu navedena ograničenja ovog istraživanja i omoguće još bolje poznavanje i mogućnosti primene ove tehnike procene kvaliteta koroditeljske saradnje u toku tranzicije u roditeljstvo.

### *Sukob interesa*

Nemamo sukoba interesa za prijavljivanje.

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### Izjava o dostupnosti podataka

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Research Article

# Relationships between Bereavement Support Strategies and Empathy Dimensions

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## ABSTRACT

Helpful and unhelpful bereavement support strategies have been identified in many studies. However, few studies have researched the reasons for choosing different ways of supporting the bereaved. Taking this into account, the current study aimed to analyze the relationships between empathy dimensions (Empathy with negative emotions, Empathy with positive emotions, Empathy as a social role, and Emotional reactions provoked by empathy) and bereavement support strategies (Social support/offering practical help, Minimizing feelings, Providing a religious perspective, and Complimenting the deceased and/or bereaved). The Bereaved Support Questionnaire and the Empathy Assessment Questionnaire were administered online to a sample of 271 participants (68.3% female). Descriptive statistics revealed the tendency of respondents to achieve higher than average scores on all empathy dimensions, except on Empathy with negative emotions. This finding points to a difficulty in consoling the bereaved, as they are mostly faced with unpleasant feelings. The respondents showed a slight preference to choose supportive messages that are high in person-centeredness, over those belonging to the Minimizing feelings and Providing a religious perspective subscale. Pearson's correlation and network analysis indicated that empathy is positively associated with the use of high person-centered approach to support (Social support/offering practical help and

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Complimenting the deceased and/or bereaved). However, results have also shown that the inclination to use these types of messages is to some extent accompanied with a tendency to minimize the feelings of the bereaved. The article discusses possible interpretations of these findings, as well as guidelines for implementing the findings in bereavement support.

*Keywords:* bereavement support strategies, empathy dimensions, person-centered messages, avoidance coping

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## Introduction

The death of a beloved person is one of life's most stressful events. Despite this, there has always been a tendency among humans to avoid unpleasant topics in everyday conversations, such as death-related losses (Arambašić, 2005; Cohen & Samp, 2018; Macdonald, 2019). Reliance on such avoidant coping strategies results in a ubiquitous lack of knowledge regarding adequate bereavement support strategies. Nevertheless, as part of the bereavement process, most people need appropriate social support, and its absence is a crucial risk factor for the development of complicated grief and is a significant predictor of high psychosocial distress (Bath, 2009). The benefits to the bereaved of conversation, socialization, and primary social network connections are widely accepted (Kouriatis & Brown, 2011). However, despite best intentions, people sometimes say or do things that the bereaved perceive as unhelpful or even harmful. In order to identify the most useful bereavement support strategies, researchers have focused on detecting the formal and substantive characteristics of supportive messages that contribute to the emotional well-being of a bereaved person (Bodie et al., 2012). Some pioneering studies in this domain have identified the following useful and comforting bereavement support strategies: offering presence, talking about feelings, expressing concern for the wellbeing of the bereaved, religious support, complimenting the deceased, offering practical help, talking about the possibility of meeting the deceased again, talking about the possible resurrection of the loved one, discussing memories about the deceased, complimenting the bereaved, and emphasizing the positive aspects of the current situation. In contrast, messages perceived as useless or even harmful by the bereaved were: giving advice, trying to speed up the recovery process, rude remarks, minimizing suffering/imposing a cheerful mood, and complete identification with the emotions of the bereaved ("I completely understand you"), unwanted practical help, interference in the life of the bereaved, and unwanted conversations about the deceased (Lehman et al., 1986; Marwit & Carusa, 1998; Rack et al., 2008). According to the results

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of the only research conducted in the Serbian language (to our knowledge), the support strategies rated as most helpful were: providing social support, complimenting the deceased/bereaved and normalizing the feelings of the grieving person (Gencić et al., 2018). These findings are consistent with the results of the previously mentioned studies.

The common feature of adequate comforting messages is that they contain high person-centeredness in their formulations. High person-centeredness refers to the extent to which messages explicitly contextualize and acknowledge the feelings and perspectives of a person in distress (Oh et al., 2021). Low person-centered messages deny a person's emotions and declare how they should think, feel, and behave ("You need to move on with your life"). Moderately person-centered messages implicitly recognize the distressed person's feelings, but they do not elaborate or contextualize them extensively, and are mostly focused on the cognitive explanations of the painful circumstances ("There is a reason for everything, even if you don't see it now"). Highly person-centered messages encourage open conversation, while explicitly acknowledging and elaborating the feelings of the distressed person ("I care for you and I am here whenever you want to talk") (Bodie & Jones, 2012; Burlinson et al., 1994; Gencić et al., 2018; Jones & Guerro, 2001).

Although the abovementioned studies have identified the bereavement support strategies that are mostly rated as helpful, questions remain concerning why some people are better supporters of the bereaved than others, and why they choose certain support strategies. Decades of accumulated scientific evidence from various sub-disciplines of psychology points to a key role of empathy in achieving positive social interactions (Clark, 2010). Empathizing with others' distress-related emotions sends a message that they are cared for and motivates various forms of supportive behavior, aimed at alleviating their suffering (Andreychik, 2019; Sun et al., 2019). Because empathy represents a personal characteristic that enables people to develop quality relationships, accept the emotions of others and foster mutual understanding, it is expected that it would play an important role in choosing a bereavement support strategy (Toffoli et al., 2022).

Empathy represents a person's reaction that results from the apprehension or comprehension of another's emotional state, and it is identical or at least very similar to the other persons' experience (Andreychik & Migliaccio, 2015). Thus, empathy is an interpersonal phenomenon, in which a person shares common feelings and thoughts with another person and encourages their expression, without judging them, while maintaining personal boundaries (Toffol et al., 2022). Empathy is not a clearly defined single ability, but a complex socio-emotional competency with a multidimensional nature (Sun et al., 2019). According to one of the most cited taxonomies (Davis, 1994), empathy consists of an affective and a cognitive component. The cognitive component can be defined as the ability to take the perspective of others into account in order to understand their intrapersonal state, whereas affective empathy is an automatic affective response, which entails sharing another's emotions (Jauniaux et al., 2020; Sun et al., 2019). Affective empathy can lead to two possible vicarious emotional responses to the suffering of others: personal distress (PD) and empathic concern (EC). PD is self-oriented and involves anxiety, worry and/or grief as a reaction to the other person's distress, while EC is other-oriented and comprises feelings of compassion, sympathy and warmth towards a person in need (Grynberg & López-Pérez, 2018). Accordingly, empathy can be understood as taking an active interest in the problems of others, that can lead to attempts to improve their well-being; it is therefore closely related to prosocial, altruistic behavior (Andreychik & Migliaccio, 2015; Carrizales et al., 2022; Ogińska-Bulik & Michalska, 2022; Vukosavljevic-Gvozden et al., 2015; Yin & Wang, 2022). The multidimensional nature of empathy was confirmed during the construction of the Empathy Assessment Questionnaire (EAQ) in the Serbian language, which was also used in this research (Genc i sar., 2009). The factor structure of this instrument is described in detail in the Measures section.

The first, descriptive aim of the current study was to identify the preferred types of bereavement support strategies amongst the participants. Secondly, we investigated the relationships between supportive messages and different dimensions of empathy. While various empirical research has shown

that empathy plays an important role in helping people cope with a wide range of stressful life experiences (Andreychik, 2019), to the best of our knowledge, no previous study has directly examined how different aspects of empathy contribute to the choice of support strategies people use in their attempt to help the bereaved. Since previous studies show that support strategies differently affect the bereaved, with high person-centered strategies being rated as more helpful than low person-centered strategies, this study aims to explore how empathy determines the choice of support strategies. Both dimensions of affective empathy should be more positively correlated with the readiness to offer support to the bereaved, as empathizing with other people's feelings fosters approach and connection. Affective and cognitive empathy should determine the choice of highly person-centered bereavement strategies in the form of Social support/offering practical help and Complimenting the deceased/bereaved. More specifically, this research primarily aimed to determine whether more empathetic individuals choose support strategies with high person-centeredness and whether all empathy dimensions were related to such strategies. This was achieved by determining the relationships between different empathy dimensions and various types of bereavement support strategies.

## Method

### Participants and procedure

The convenient study sample consisted of 271 respondents (68.3% female), with an average age of 35.25 years ( $SD = 13.37$ ), from 18 to 71 years. The research subjects were predominantly highly educated (76%), with only 24% of participants not having a university degree.

Google Forms software was used to administer the questionnaires, which were presented in an online survey format, with information about the study circulated via Facebook. The link to the study was shared through the researchers' personal profiles and in different groups. Respondents were

invited to participate in the study and to forward the invitation to others. At the beginning, respondents were informed about the objectives of the study. Following the ethical guidelines of psychological research, the respondents gave their informed consent to voluntarily and anonymously participate in the research. Filling out the questionnaires took approximately 10 minutes per participant. Data collection extended over a three-month period.

## Measures

### *Bereaved Support Questionnaire*

The Bereaved Support Questionnaire (BSQ; Genc i sar, 2018) is a 54-item self-report measure of the helpfulness of comforting messages received from members of the bereaved's social network. The respondents were presented with the list of comforting messages (items), and they were asked to estimate their effectiveness in providing support for the bereaved (1 – *"I find this sentence not at all comforting for a grieving person"*; 4 – *"I find this sentence very comforting for a grieving person"*). This questionnaire was developed in the Serbian language, in which it was also administered.

The BSQ was revalidated on the current sample with exploratory factor analysis using minimum residual as an estimation method with Promax rotation. Parallel analysis showed that four factors were significant: Social support/offering practical help, Minimizing feelings, Providing a religious perspective, and Complimenting the deceased and/or bereaved. The extracted factors explained 44% of overall variances. Cronbach's alpha coefficients for the particular scales were in the range from .83 (Complimenting the deceased and/or bereaved) to .91 (Social support/offering practical help).

Social support/offering practical help represents a readiness to support the bereaved through conversation, being at their disposal, and offering specific help in daily activities (*"Whenever you want to talk about it, I will gladly listen"*). Messages within this strategy are highly person-centered. Minimizing feelings operationalizes the strategies of advising the bereaved to stop

thinking about the loss and suggesting the avoidance and suppression of unpleasant feelings (*"There is no point in crying, there is no going back"*). Therefore, this strategy is related to low person-centeredness. Providing a religious perspective represents the strategy of accepting the loss as God's decision (*"God's will should not be questioned"*), and messages within this strategy also have low person-centeredness. Complimenting the deceased and/or bereaved refers to remembering the deceased person as good and recognizing the bereaved's capacity to successfully overcome the loss (*"It was a pleasure knowing him"*). This strategy is rated as having moderate to high person-centeredness (Genc i sar., 2018).

#### *Empathy Assessment Questionnaire*

The EAQ (Genc i sar., 2009) is a 42-item self-report measure with a 5-point response scale (1 – *"I completely disagree"*; 4 – *"I completely agree"*). This questionnaire measures four different empathy dimensions: two dimensions operationalize the affective component of empathy (Empathy with negative emotions and Empathy with positive emotions), Empathy as a social role refers to cognitive empathy, and the dimension Emotional reactions provoked by empathy represents the emotional-behavioral aspect of empathy. This questionnaire was also developed and administered in the Serbian language.

Exploratory factor analysis using minimum residual as an estimation method with Promax rotation confirmed the structural validity of the instrument. As in the original study, the parallel analysis showed that four factors were significant, and they explained 43% of the overall variance. Cronbach's alpha coefficients for the subscales were in the range from .77 (Emotional reactions provoked by empathy) to .90 (Empathy with negative emotions).

Empathy with negative emotions represents a tendency to empathize with other people's unpleasant feelings (*"I feel like crying myself when I see others crying"*). Empathy with positive emotions is described as the inclination of empathizing with the pleasant emotions of others (*"My friend's cheerful mood brightens me up as well"*). Empathy as a social role refers to the more cognitively conceptualized component of empathy. A person who achieves



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high scores on this subscale shows interest and understanding of the needs and problems of others and sees themselves as a competent helper. This does not necessarily imply sharing an emotional experience with others (*"People often ask me for advice"*). Emotional reactions provoked by empathy represent the tendency to react emotionally to injustice (*"I get very upset and angry when I see or hear that someone is abusing their child"*), and it can be seen as a basis for altruistic behavior.

### Data analysis

Initially, we examined the descriptive statistics for all studied variables. Variables were operationalized as the average of scores for the questionnaire subscales. The scoring keys for each variable (see Appendix A) were generated based on the results of pattern matrices. Pearson's correlations were performed to examine the relationships between studied variables.

Network analysis was performed on the empathy dimensions and bereavement support strategies to understand the structure of relationships between the two concepts. As most of the research variables violated normality assumptions (Curran et al., 1996), we applied the nonparanormal transformation via the R package "huge" (Epskamp & Fried, 2018; Jiang et al., 2019). A data-driven method and Hittner's method for comparing dependent correlations (Hittner et al., 2003) did not identify any redundant nodes. All correlations were lower than 0.70, and no pair exhibited highly similar patterns of correlations with the remaining nodes in the network. The analysis was performed on a partial correlation matrix with minimized spurious correlations to identify unique pairwise interactions between variables (Epskamp, et al., 2017; Epskamp & Fried, 2018). To compute and visualize regularized partial correlation networks, we used a graphical least absolute shrinkage and selection operator ("GLASSO") algorithm. The "EBICglasso" function was employed to help identify the true network structure and minimize the selection of optimal Extended Bayesian Information Criterion (EBIC) (Epskamp & Fried, 2018). To interpret the structure, we analyzed edges,

central indices (Degree (strength), Closeness, and Betweenness), and the Zhang clustering coefficient. A high Zhang clustering coefficient (i.e. a high number of connections among the neighbors of a focal node over the maximum possible number of such connections), together with low centrality, indicates the redundancy of the node (Costantini et al., 2015, 2019). The accuracy and stability of edges and centrality estimates were assessed with a “nonparametric” bootstrap procedure (Epskamp & Fried, 2018). The number of bootstrap samples was 2000.

We used JASP software, version 0.12.2, (JASP Team, 2022) in all statistical analyses. In addition, we used the R package “network tools” (Jones, 2017); more precisely, we used the “goldbricker” function for the application of Hittner’s method and the bootstrapping procedure integrated into the “bootnet” package (Epskamp & Fried, 2018).

## Results

### Descriptive statistics

Descriptive statistics for the studied variables are provided in Table 1.

**Table 1**Descriptive statistics for the studied variables ( $N = 271$ )

| Variables                               | Min  | Max  | $M$  | $SD$ | Standardized |         |
|---|------|------|------|------|--------------|---------|
|   |      |      |      |      | Sk           | K       |
| Social support/offering practical help  | 1.00 | 3.92 | 2.94 | .58  | -4.93**      | 1.86*   |
| Minimizing feelings                     | 1.05 | 3.81 | 1.89 | .52  | 3.93**       | .45     |
| Providing a religious perspective       | 1.00 | 4.00 | 1.90 | .72  | 2.60**       | -1.79   |
| Complimenting the deceased/bereaved     | 1.00 | 4.00 | 2.66 | .85  | -0.13        | -2.79** |
| Empathy with negative emotions          | 1.33 | 5.00 | 3.10 | .78  | .60          | -1.72   |
| Empathy with positive emotions          | 2.00 | 5.00 | 4.18 | .54  | -5.73**      | 3.62**  |
| Empathy as a social role                | 1.29 | 5.00 | 3.88 | .67  | -5.40**      | 4.45**  |
| Emotional reactions provoked by empathy | 1.00 | 5.00 | 4.13 | .80  | -6.47**      | 1.59    |

Note.  $p < 0.05$ , \*\*  $p < 0.01$ ; Sk = skewness, K = kurtosis.

## Correlations

Pearson's correlation coefficients between researched variables are provided in Table 2.

**Table 2**Pearson's correlations among researched variables ( $N = 271$ )

| Variable | SSOPR | MF    | PRP   | CDB   | ENE   | EPE   | ESR   |
|----------|-------|-------|-------|-------|-------|-------|-------|
| MF       | .30** | —     |       |       |       |       |       |
| PRP      | .06   | .55** | —     |       |       |       |       |
| CDB      | .65** | .16** | .13*  | —     |       |       |       |
| ENE      | .33** | .07   | .08   | .25** | —     |       |       |
| EPE      | .43** | .15*  | .17** | .33** | .42** | —     |       |
| ESR      | .43** | .14*  | .10   | .25** | .27** | .59** | —     |
| ERPE     | .24** | .06   | .09   | .18** | .44** | .45** | .37** |

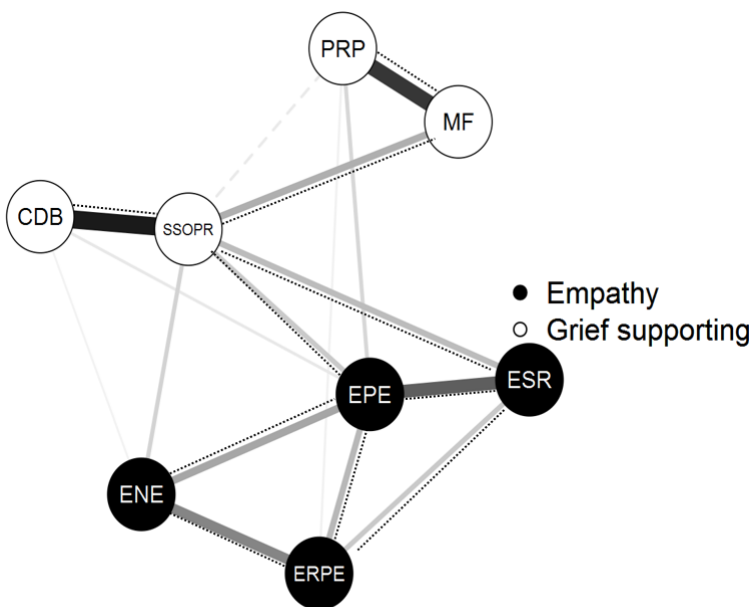
*Notes.*  $p < 0.05$ , \*\*  $p < 0.01$ . Correlations between two sets of variables are shown in bold. SSOPR = Social support/offering practical help, MF = Minimizing feelings, PRP = Providing a religious perspective, CDB = Complimenting the deceased/bereaved, ENE = Empathy with negative emotions, EPE = Empathy with positive emotions, ESR = Empathy as a social role, ERPE = Emotional reactions provoked by empathy.

## Network analysis

Network analysis was used for the analysis of mutual relations between the empathy dimensions and bereavement support strategies. The network contains 8 nodes and 16 non-zero undirected edges of a possible 28 (Figure 1). The general structure is not sparse and nodes are clustered into communities according to the belonging domain. The crucial variables, according to their central positions on the graph, are Social support/offering practical help and Empathy with positive emotions. This network resembles a "scale-free" network because these two crucial variables are connected to many others (Barabási, 2012).

*Edge analysis*

On the graphical presentation of the network (Figure 1), thicker edges were apparent between variables that belonged to the same concept. These relationships were significant according to narrower confidence intervals that did not include zero in the bootstrapping analysis. The thickest connections between variables that presented different concepts were found among Empathy as a social role and Social support/offering practical help. Slightly weaker relations were found between Empathy with positive emotions and Empathy with negative emotions on the one side, and with Social support/offering practical help on the other side.



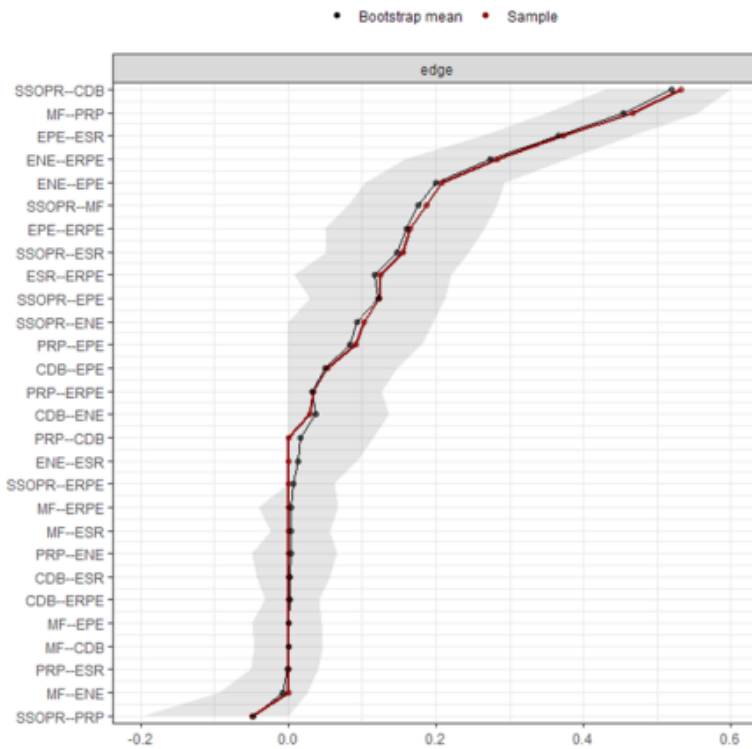
**Figure 1.** The estimated network structure of empathy and grief-support dimensions  
*Note.* The thickness of an edge reflects the magnitude of the association. Positive correlations are represented with a solid line and negative correlations with a dashed line. Stable edges are marked with a dotted line. PRP = Providing a religious perspective, MF = Minimizing feelings, CDB = Complimenting the

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deceased/bereaved, SSOPR = Social support/offering practical help, EPE = Empathy with positive emotions, ESR = Empathy as a social role, ENE = Empathy with negative emotions, ERPE = Emotional reactions provoked by empathy.

Empathy with positive emotions was also weakly related to Providing a religious perspective, and even more weakly correlated with Complimenting the deceased/bereaved. Emotional reactions provoked by empathy was weakly related to Providing a religious perspective. A negative correlation was evident between Providing a religious perspective and Social support/offering practical help. The Pearson correlation of these variables .06 was insignificant so this finding could be a consequence of suppression or the conditioning on common effect (Pearl, 2000).

The stability of these edges was confirmed for the following relationships (because their associated 95% confidence intervals were not wide and did not include zero): Social support/offering practical help and Complimenting the deceased/bereaved; Minimizing feelings and Providing a religious perspective; Empathy with positive emotions and Empathy as a social role; Empathy with negative emotions and Emotional reactions provoked by empathy; Empathy with negative emotions and Empathy with positive emotions; Social support/offering practical help and Minimizing feelings; Empathy with positive emotions and Emotional reactions provoked by empathy; Social support/offering practical help and Empathy as a social role; Social support/offering practical help and Empathy with positive emotions; and Empathy as a social role and Emotional reactions provoked by empathy (Figure 2).



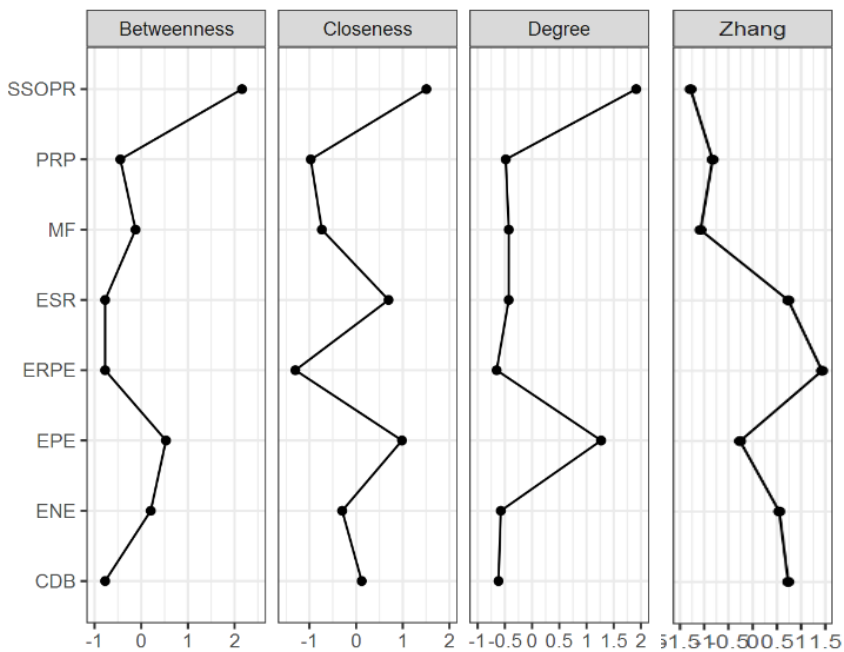
**Figure 2.** Bootstrapped 95% confidence intervals of estimated edge weights for the GLASSO network.

*Note* The red line indicates the sample values and the gray area is the 95% confidence intervals. The dark line indicates the bootstrapped mean values. GLASSO = graphical least absolute shrinkage and selection operator.

*Centrality indices*

The central position is occupied by Social support/offering practical help; this variable had the highest scores on all three centrality indices, indicating that it has many connections and can activate other variables easily. The second-highest central position belongs to Empathy with positive emotions. Empathy with positive emotions has a very high score in terms of Degree, relative to other variables. The Closeness scale shows the importance of Empathy as a social role and Complimenting the deceased/bereaved. The variable Providing

a religious perspective had the least central position for all three centrality indices. This variable also had a high Zhang clustering coefficient, indicating that this variable is redundant and could be excluded. The plots for the centrality indices of the nodes – namely Betweenness, Closeness, and Degree (strength) – are shown in Figure 3.



**Figure 3.** Centrality plot and Zhang clustering coefficients.

### Mediation analysis

The mediation analysis was done solely for the relationships for which the stability was confirmed. The analysis showed that Social support/offering practical help completely mediated the effects of empathy dimensions on Minimizing feelings and Complimenting the deceased/bereaved. Weak correlations of Empathy with positive emotions and Empathy as a social role with Minimizing feelings (Table 2) became insignificant partial correlations



(Figure 2) in the network model. Moderate correlations of Complimenting the deceased/bereaved and Empathy with positive emotions, Empathy with negative emotions, Empathy as a social role with, as well as weak correlation with Emotional reactions provoked by empathy became insignificant. Additionally, Empathy with positive emotions mediated the effect of Empathy with negative emotions on Social support/offering practical help. The moderate correlations of Empathy with positive emotions and Social support/offering practical help became insignificant partial correlations.

## Discussion

The death of a beloved person is universally one of the most profound stressors that everyone will experience sooner or later in their life (Arambašić, 2005). Although various forms of social support are consistently reported as significant predictors of the grieving process outcomes (Aoun et al., 2019), it is widely recognized that the bereaved often do not receive adequate and sufficient support (Genc i sar., 2018). For the support to be beneficial, the need for help must be properly identified, the potential supporter must be willing and capable of providing the support, and the supportive strategy must be perceived as helpful by the receiver (Logan et al., 2018). Not every bereavement support strategy will serve as a protective factor. If the supporter is unable to effectively communicate empathy with the griever, some forms of support may even lead to the bereaved experiencing greater distress (Aoun et al., 2019). The potentially ambiguous outcomes of social support prompted us to examine the relationships between empathy dimensions and different types of bereavement support strategies.

The results of this study showed that respondents with higher scores on empathy dimensions mostly chose support strategies with high person-centeredness, while they rarely chose strategies with low person-centeredness. This finding is in accordance with the already widely accepted and empirically confirmed knowledge that empathetic understanding contributes to fostering open communication and trust (Clark, 2010).

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In line with previous research, both empathy and support for the bereaved were conceptualized in a multidimensional manner, and they were operationalized with questionnaires previously validated in the Serbian language. We identified a four-dimensional structure of empathy: Empathy with negative emotions, Empathy with positive emotions, Empathy as a social role, and Emotional reactions provoked by empathy. The different support strategies were categorized as Social support/offering practical help, Minimizing feelings, Providing a religious perspective, and Complimenting the deceased and/or bereaved.

Participants in our study achieved higher than average scores on all empathy dimensions, except on Empathy with negative emotions, where they had symmetrical scores around average. This could indicate that the respondents in our research are generally more empathetic than the average person. However, the respondents could have been aware of the social desirability of being empathetic. Moreover, research has shown that women are generally more empathetic than men (Benenson et al., 2021; Hwang, 2022; Miller & Hübner, 2022; Toussaint & Webb, 2005), and our sample consisted predominantly of females. On the other hand, the somewhat lower mean scores on the dimension Empathy with negative emotions (compared to other empathy dimensions) could potentially indicate the activation of personal distress as a special vicarious emotional response in some of our respondents (Grynberg & López-Pérez, 2018). Considering that the bereaved experience predominantly negative feelings such as sadness, guilt, anxiety, etc., it is not surprising if some supporters become overwhelmed with their personal distress, as a reaction to the identification with the grieving person's suffering (Andreychik & Migliaccio, 2015; Guendelman et al., 2022; Toffol et al., 2022).

The respondents showed a slight preference to choose supportive messages from the Social support/offering practical help and Complimenting the deceased and/or bereaved subscales over those from the Minimizing feelings and Providing a religious perspective categories. High person-centeredness is the common characteristic of the predominantly chosen support strategies.

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This characteristic indicates that the individual recognizes the bereaved's emotions, but will also encourage them to open conversation and help them find meaning in their loss (Bodie & Jones, 2012; Burlison et al., 2009; Samter, 2002).

In contrast, the strategy of Minimizing feelings does not recognize the bereaved's feelings, instead trying to impose a cheerful mood, giving them unwanted advice, and not accepting their perspective – these are characteristics of low person-centered messages (Bodie & Jones, 2012). The participants in our study chose this strategy less often than average, as was expected, considering their high scores on empathy dimensions. There was a positive correlation between the strategies of Minimizing feelings and Providing a religious perspective. This result could be due to the similar formulations of the messages belonging to these types of support strategies: they both imply the acceptance of the loss as necessary, without recognizing the bereaved's feelings or needs (e.g. "Don't cry, tears won't bring him back"; "Prayers will certainly help you").

The results of network analysis led us to additional insights into the structure of relationships between bereavement support strategies and empathy types. According to the main finding of this analysis, Social support/offering practical help represents a central strategy in supporting the bereaved, since it was correlated with all other strategies. The results have shown that people who are more inclined to use the support strategy Social support/offering practical will also be more likely to use the strategy Complimenting the deceased/bereaved and sometimes even the strategy Minimizing feelings. Since messages within Social support/offering practical help and Complimenting the deceased/bereaved are moderate to highly person-centered, their connection could have been expected (Genc i sar., 2018). However, the strategy Minimizing feelings includes messages with low person-centeredness. Therefore, the connection of this strategy to Social support/offering practical help was surprising. Although the respondents did not tend to choose the support strategy Minimizing feelings, the results have

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shown that if they found themselves in a situation of providing social support to the bereaved, they would have been inclined to use this strategy. This means that in circumstances where people spend time with the bereaved ("I'm here if you need me") or help them in everyday situations ("Can I help you with your daily chores?"), they sometimes advise them to stop talking about the loss (" Don't worry so much about it") and they also suggest suppressing the unpleasant feelings ("Don't cry, tears won't bring him back"). Moreover, Social support/offering practical help is the only strategy that is significantly and directly influenced by empathy – more precisely by Empathy with positive emotions and Empathy as a social role. Mediation analysis confirmed its important status in the model, by showing that it mediates the effects of empathy on Complimenting the deceased/bereaved and Minimizing feelings. Mediation analysis also showed that the effect of Empathy with positive emotions mediates the effect of Empathy with negative emotions on Social support/offering practical help, suggesting that Empathy with negative emotions contributes to the choice of this strategy, only in the circumstance when Empathy with positive emotions is also present. An important finding of network analysis is that Empathy with negative emotions has stronger partial correlation (than Empathy with positive emotions) with Emotional reactions provoked by empathy. This indicates that Empathy with negative emotions contributes significantly to stronger unpleasant emotions in the supporter, which can lead to their emotional exhaustion.

Providing effective support to the bereaved who are dealing with often severe distress is a challenging task (Andreychik, 2019). Empathizing with another person's negative feelings comes at an "emotional cost" for the supporter, as it can sometimes lead to their own emotional exhaustion (Guendelman et al., 2022). According to the literature on emotion regulation, it is not uncommon that when a potential supporter sees a person in despair, he or she is more likely to turn to regulating his or her own unpleasant feelings evoked by listening to the griever (Jauniaux et al., 2020). This form of emotional distancing is not surprising, given that further identification and

confrontation with the bereaved's intense emotional state can be experienced as "unbearable" (Toffol et al., 2022). Therefore, supporters most likely use Minimizing feelings as a support strategy when they are overwhelmed by their own negative emotions caused by empathizing with the bereaved person's suffering.

The finding that the difficulty of empathizing with the negative emotions of the bereaved can lead to the choice of less effective support strategies can also be viewed from a different, theoretically and empirically grounded perspective. Namely, the messages that fall into the category of minimizing feelings ("Don't cry, tears won't bring him back") suggest that the person providing support is, on the one hand, trying to avoid confronting the grieving person's unpleasant feelings and, on the other hand, encouraging the bereaved person to avoid his or her own negative emotions. Thus, this finding can be related to coping strategies. Coping has been described as a phenomenon that assists people in maintaining an adequate level of psychosocial adaptation when facing stressors (Bannon et al., 2022). Coping strategies can be divided into adaptive and maladaptive ones, depending on whether they help reduce the level of distress, or make the situation even worse (Sun et al., 2019). Avoidance coping strategies involve keeping feelings to oneself, avoiding the source of stress, and avoiding being with people during stressful life events (Jacob et al., 2022; Thomassen et al., 2022), which is why they can be seen as maladaptive. The tendency to mirror the griever's pain and experience distress and emotional exhaustion themselves in response to the other's suffering, may evoke an "egoistic" motivation in supporters to diminish their own unpleasant emotions by using avoidant coping strategies (Jauniaux et al., 2020). Hence, when supporters send messages that belong to the dimension Minimizing feelings, they themselves use avoidance coping, and at the same time, they encourage avoidant coping in the bereaved, which can easily result in providing poor social support (Toffol et al., 2022). The existing literature on the relationship between empathy with negative emotions and avoidance suggests that personal distress as a reaction to empathizing with another person's unpleasant

feelings is positively related to the frequent use of avoidance coping (Grynberg & López-Pérez, 2018).

While this study makes an important contribution to the understanding of the relationships between social support strategies in bereavement and different empathy dimensions, it has several limitations, the most important of which is its cross-sectional design. This prevented the investigation of temporal and causal relationships between the examined constructs. Secondly, the results rely on self-report measures, which are known to be subject to various biases (Cacciatore et al., 2021). Even though the present study did not aim to examine the existence and nature of gender differences in all measured variables, another limitation is the questionable representativeness of the sample, as it consisted predominantly of highly educated females, which may have somewhat skewed the findings, because women tend to be generally more empathetic (Benenson et al., 2021; Miller & Hübner, 2022). It is also reasonable to assume that men and women may desire and offer different kinds of bereavement support strategies (Logan et al., 2018). Moreover, the data was collected through social media (Facebook), which limits the generalization of the results to the broader population. Because of these limitations, future studies should rely on more balanced samples in terms of education and gender. To ensure a higher degree of generalizability of the results, it would be useful for future research to combine online data collection with the more traditional face-to-face approach.

## Conclusion

Our research, particularly the results of network analysis, showed that people with higher scores on the empathy dimensions generally chose more comforting messages with higher person-centeredness for supporting the bereaved. However, the results have also shown that sometimes supporters opt for less adequate bereavement support strategies. That is, they tend to minimize the bereaved's feelings in order to protect themselves from their own distress evoked by vicarious emotional responses to the bereaved's person suffering (Jauniaux et al., 2020).

Several implications and guidelines for the practice of bereavement support can be derived from the results of this study. While most grieving individuals manage to successfully process their loss with the help of their existing social networks (family and friends), some of them seek support from professional sources (psychologists, counselors, psychotherapists and psychiatrists) (Aoun et al., 2019; Plaud & Urien, 2022). According to experts in the field of thanatology, the public is generally unprepared and uneducated in providing support to grieving people (Cacciatore et al., 2021; Logan et al., 2017). In addition, most mental health professionals have little to no exposure to evidence-based grief information and adequate training in loss and bereavement (Aoun et al., 2018). Few protective factors in bereavement can be consciously and deliberately modified to the extent that social support can (Logan et al., 2017). Thus, it would be very useful to design educational seminars and training courses intended for both the general population and for mental health professionals. One of the aims of these trainings should be to teach the trainees how to formulate and use highly person-centered messages when talking to the bereaved. Furthermore, empathy is widely accepted as a ubiquitously desirable characteristic of counselors, because it increases the clients' adherence to treatment, fosters the satisfaction with the therapeutic relationship and improves therapeutic outcomes (Bayne & Hays, 2016; Clark, 2010; Johnson & Karcher, 2019). The abovementioned trainings should incorporate teaching of communication skills that integrate empathetic understanding with specific counselor interventions such as reflection, cognitive restructuring, confrontation, reframing, etc. (Clark, 2010). Our findings suggest that supporters may sometimes use less adequate support strategies because of their hyperidentification with the unpleasant feelings of the bereaved. Therefore, it would be necessary to practice distress tolerance and strong emotional regulation capacities with training participants, in order to prevent the manifestation of maladaptive empathy patterns (Guendelman et al., 2022; Jauniaux et al., 2020).

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### *Conflict of interest*

We have no conflicts of interest to disclose.

### *Data availability statement*

Data files are available upon a reasonable request.

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## Appendix A

**Table 1**

KMO measure of representativity, Bartlett's  $\chi^2$ , and fit measures

| Measure                                    | BSQ       | EAQ         |
|--|-----------|-------------|
| <b>Kaiser-Meyer-Olkin</b>                  | .90       | .89         |
| <b>Bartlett's test <math>\chi^2</math></b> | 8380.47   | 5897.15     |
| <b>df</b>                                  | 1431      | 861         |
| <b>p</b>                                   | < .01     | < .01       |
| <b>Chi-squared Test</b>                    | 2477.02   | 1585.73     |
| <b>df</b>                                  | 1221      | 699         |
| <b>p</b>                                   | < .001    | < .001      |
| <b>RMSEA</b>                               | .07       | .07         |
| <b>RMSEA 90% confidence</b>                | .058 - NA | .064 - .073 |
| <b>TLI</b>                                 | .79       | .78         |

**Table 2**

Factor Loadings, Uniqueness, MSA, extracted variance and correlations between factors for BSQ

| Items   |     | SSOPR | MF  | PRP | CDB | Uniqueness | MSA |
|---|-----|-------|-----|-----|-----|------------|-----|
| God's will should not be questioned.                      | BS1 |       |     | .49 |     | .60        | .90 |
| Would you like us to do something together you enjoy?     | BS2 | .64   |     |     |     | .56        | .90 |
| Do you want to talk about it?                             | BS3 | .61   |     |     |     | .63        | .91 |
| Thank God he saved him from suffering.                    | BS4 |       | .40 |     |     | .71        | .87 |
| Whenever you want to talk about it, I will gladly listen. | BS5 | .86   |     |     |     | .42        | .93 |

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|   |      |     |     |     |     |     |
|---|------|-----|-----|-----|-----|-----|
| Some events we simply cannot control.                           | BS6  |     | .28 |     | .79 | .83 |
| It is normal that it is difficult now, but your pain will pass. | BS7  |     | .59 |     | .68 | .88 |
| It's okay if you don't feel like hanging out.                   | BS8  | .57 |     |     | .69 | .90 |
| Life goes on.   | BS9  |     | .64 |     | .65 | .87 |
| Don't worry so much about it.                                   | BS10 |     | .69 |     | .66 | .88 |
| Can I help you with your daily chores?                          | BS11 | .57 |     |     | .66 | .87 |
| Why don't you get a pet so you don't feel lonely.               | BS12 |     | .44 |     | .78 | .87 |
| You're a true fighter!  | BS13 | .47 | .30 |     | .60 | .92 |
| Time heals all wounds.  | BS14 |     | .77 |     | .43 | .91 |
| What doesn't kill you makes you stronger.                       | BS15 |     | .63 |     | .55 | .89 |
| I'm here if you need me.  | BS16 | .81 |     |     | .51 | .92 |
| Asking for help does not make you weak.                         | BS17 | .60 |     |     | .65 | .93 |
| Fortunately, you have people you can rely on.                   | BS18 | .59 |     |     | .57 | .94 |
| It's hard for me to see you suffer.                             | BS19 | .30 | .30 |     | .71 | .88 |
| You are a strong person, you will overcome sadness.             | BS20 | .30 | .40 |     | .57 | .94 |
| God takes those He loves the most.                              | BS21 |     |     | .66 | .56 | .87 |
| There is no point in crying, there is no going back.            | BS22 |     | .71 |     | .56 | .86 |

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|  |      |     |      |     |     |     |
|--|------|-----|------|-----|-----|-----|
| I admire your strength.  | BS23 | .53 | .26  |     | .56 | .91 |
| He was very dear to me.  | BS24 |     |      | .74 | .35 | .89 |
| I understand how you feel.   | BS25 | .33 |      | .28 | .65 | .91 |
| Prayers will certainly help you.   | BS26 |     | .84  |     | .33 | .84 |
| Maybe a self-help book would help.   | BS27 |     | .33  |     | .72 | .92 |
| It will help you the most if you rely on your faith in God.                        | BS28 |     |      | .85 | .30 | .83 |
| I'm here for you if you want to talk.  | BS29 | .80 |      |     | .45 | .92 |
| God has a plan for everyone.   | BS30 |     |      | .67 | .43 | .89 |
| It was a pleasure knowing him.   | BS31 |     |      | .78 | .33 | .90 |
| You have to be strong for your loved ones.   | BS32 |     | .34  | .36 | .57 | .91 |
| Maybe you'd like to go shopping together.  | BS33 | .29 |      | .28 | .65 | .92 |
| God helped him not to suffer anymore.  | BS34 |     | .31  | .48 | .51 | .89 |
| Everything happens for a reason.   | BS35 |     | .42  |     | .65 | .87 |
| Don't cry, tears won't bring him back.   | BS36 |     | .71  |     | .55 | .87 |
| You will help other mourners if you don't show them how difficult this is for you. | BS37 |     | .54  |     | .67 | .89 |
| I am here for you.   | BS38 | .89 | -.25 |     | .38 | .91 |



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|  |      |     |     |     |     |     |
|--|------|-----|-----|-----|-----|-----|
| At least he doesn't suffer anymore!                                      | BS39 |     | .37 |     | .80 | .78 |
| I always enjoyed his company.  | BS40 |     |     | .80 | .27 | .89 |
| It will be easier if you talk about it.                                  | BS41 | .38 |     | .26 | .65 | .91 |
| Do you want to go for a walk?  | BS42 | .44 |     | .31 | .57 | .90 |
| I care about you.  | BS43 | .66 |     |     | .49 | .90 |
| My door is always open for you.  | BS44 | .76 |     |     | .41 | .94 |
| I know someone with a similar experience. Would you like to talk to him? | BS45 | .38 |     |     | .79 | .90 |
| At least he had a fulfilled life.  | BS46 |     | .42 |     | .68 | .90 |
| Don't allow yourself to be weak now.                                     | BS47 |     | .71 |     | .48 | .89 |
| Don't think too much.  | BS48 |     | .76 |     | .52 | .88 |
| If it's easier for you not to be alone, count on me.                     | BS49 | .81 |     |     | .44 | .94 |
| It is completely natural to feel this way now!                           | BS50 | .59 |     |     | .59 | .94 |
| You are doing great in this difficult situation.                         | BS51 | .43 | .35 |     | .59 | .90 |
| Do you need help with household chores?                                  | BS52 | .55 |     |     | .56 | .90 |
| He was a wonderful person.   | BS53 |     |     | .69 | .32 | .92 |

|   |      |      |      |      |      |     |     |
|---|------|------|------|------|------|-----|-----|
| I don't know what to tell you, but I can see that it is hard for you. | BS54 | .33  |      |      | .32  | .67 | .91 |
| SumSq. Loadings   |      | 9.60 | 6.73 | 3.88 | 3.34 |     |     |
| Proportion var  |      | .18  | .12  | .07  | .06  |     |     |
| F1  |      |      |      |      |      |     |     |
| F2  |      | .33  |      |      |      |     |     |
| F3  |      | .11  | .61  |      |      |     |     |
| F4  |      | .63  | .22  | .08  |      |     |     |

*Note.* Applied rotation method is Promax. SSOPR = Social support/offering practical help, MF = Minimizing feelings, PRP = Providing a religious perspective, CDB = Complimenting the deceased/bereaved.

**Table 3**

Factor Loadings, Uniqueness, MSA, extracted variance and correlations between factors for EAQ

| Items   |     | ENE | EPE | ESR | ERPE | Uniqueness | MSA |
|---|-----|-----|-----|-----|------|------------|-----|
| People consider me to be a person who can listen.           | ED1 |     |     | .52 |      | .52        | .87 |
| People often ask me for advice.                             | ED2 |     |     | .83 |      | .31        | .82 |
| A lot of people seek my advice when they have problems.     | ED3 |     |     | .88 |      | .24        | .83 |
| I am happy for my friends' success.                         | ED4 |     | .57 |     |      | .64        | .85 |
| People gladly tell me their problems, because I can listen. | ED5 |     |     | .72 |      | .36        | .90 |

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|   |      |     |     |     |
|---|------|-----|-----|-----|
| When I find myself in a situation where my friend is experiencing success, I also feel proud. | ED6  | .50 | .65 | .90 |
| I am a person who typically recognizes other people's needs.                                  | ED7  | .54 | .62 | .88 |
| People don't hesitate to ask me for advice.   | ED8  | .57 | .66 | .94 |
| I can leave others alone if I feel they need it.  | ED9  | .38 | .82 | .85 |
| My friend's cheerful mood brightens me up as well.  | ED10 | .58 | .66 | .90 |
| I always listen carefully to what others are telling me.                                      | ED11 | .48 | .69 | .88 |
| I can often feel what others need.  | ED12 | .49 | .56 | .85 |
| I understand my loved ones even without saying a word.  | ED13 | .55 | .55 | .90 |
| When a friend says that they experienced something nice, I am happy for them.                 | ED14 | .88 | .36 | .91 |
| Sometimes I don't need words to understand a loved one.                                       |      | .64 | .57 | .87 |

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|  | ED15 |     |     |     |     |
|--|------|-----|-----|-----|-----|
| Sometimes I can tell the other person's feelings by their facial expressions.                    | ED16 | .43 |     | .59 | .94 |
| It makes me sad when my friend is feeling down, even if I don't know their reasons.              | ED17 | .70 |     | .40 | .94 |
| My friend's fear makes me upset also.  | ED18 | .45 | .43 | .54 | .91 |
| I also get sad when I am in the company of someone sad.  | ED19 | .50 |     | .54 | .94 |
| The sight of a couple in love cheers me up.  | ED20 |     |     | .73 | .90 |
| A failure of my friend makes me unhappy.   | ED21 | .41 | .50 | .47 | .93 |
| I like to watch people open presents.  | ED22 |     | .34 | .75 | .84 |
| I feel nervous when I see someone getting confused on an exam or in some other important moment. | ED23 | .62 |     | .61 | .88 |
| I can't stay relaxed while I am with a tense person.   | ED24 | .61 |     | .62 | .93 |
| I feel like crying myself when I see others crying.  | ED25 | .75 |     | .42 | .91 |

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|  |      |     |     |     |     |
|--|------|-----|-----|-----|-----|
| I get scared when I see movie heroes in dangerous situations.                      | ED26 | .69 |     | .58 | .91 |
| When I see a frightened person, I also get chills.                                 | ED27 | .93 |     | .33 | .90 |
| It annoys me when I see old people without help.                                   | ED28 | .35 |     | .65 | .89 |
| For me, laughter is usually contagious.  | ED29 |     |     | .77 | .89 |
| I also feel uncomfortable when my friend is embarrassed.                           | ED30 | .65 |     | .57 | .86 |
| Other people's cheerfulness, usually brightens me up.                              | ED31 |     | .33 | .73 | .89 |
| I am also very uncomfortable when I see someone getting embarrassed.               | ED32 | .75 |     | .50 | .90 |
| When I watch a quiz show, I feel almost the same tension as the contestant.        | ED33 | .58 |     | .71 | .87 |
| When I see a child with a disability, I wonder how his parents are doing.          | ED34 |     |     | .40 | .73 |
| I get very upset and angry when I see or hear that someone is abusing their child. | ED35 |     |     | .79 | .47 |
|  |      |     |     | .80 |     |

|  |      |      |      |      |      |      |
|--|------|------|------|------|------|------|
| It makes me very angry when I see that someone is unfair to a person weaker than themselves. | ED36 |      |      | .78  | .45  | .80  |
| I feel goose bumps on my body when I see someone being tickled.                              | ED37 | .57  |      |      | .73  | .83  |
| When I see a person with a disability, I think of different problems they are facing.        | ED38 |      |      | .48  | .69  | .81  |
| I get annoyed when I see an animal being tortured.   | ED39 |      |      | .63  | .58  | .91  |
| I get upset when I see a person suffering.   | ED40 | .45  |      |      | .53  | .93  |
| I feel a lump in my throat when I see someone crying.  | ED41 | .76  |      |      | .39  | .90  |
| I get chills when I see that someone is cold.  | ED42 | 0.60 |      |      | 0.65 | 0.92 |
| SumSq. Loadings  |      | 6.65 | 5.08 | 3.89 | 2.44 |      |
| Proportion var   |      | .16  | .12  | .09  | .06  |      |
| F2   |      | .47  |      |      |      |      |
| F3   |      | .20  | .58  |      |      |      |
| F4   |      | .56  | .62  | .45  |      |      |

*Note.* Applied rotation method is Promax. ENE = Empathy with negative emotions, EPE = Empathy with positive emotions, ESR = Empathy as a social role, ERPE = Emotional reactions provoked by empathy.

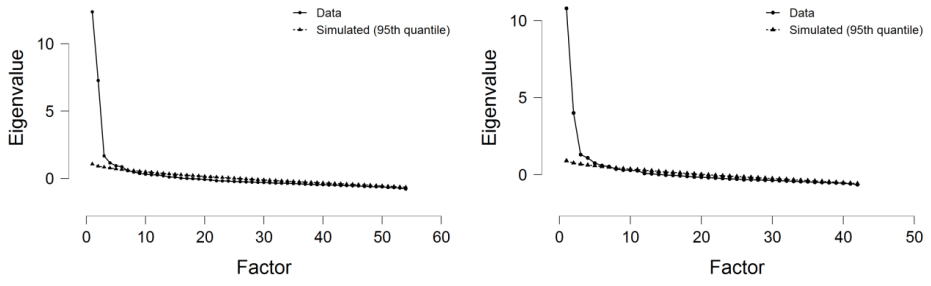


Figure 1. Scree plots (BSQ-left, EAQ – right)







Research Article

# Disintegration predicts problem alcohol and drug use, quality of life, and experience in close relationships over the Big Five and HEXACO personality traits<sup>1</sup>

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## ABSTRACT

The Disintegration trait (i.e., proneness to psychotic-like experiences and behaviors) was recently proposed as the basic personality trait that supplements the space of individual differences framed by well-known Big Five and HEXACO models. In this research, we provided additional evidence of the unique contribution of Disintegration in predicting the individual differences in some outcomes whose relations with this trait are mainly unexplored. In the first study (N = 300), we employed a 20-item measure of Disintegration (DELTA-20), a short form of the Big Five Inventory (BFI-10), alcohol and drug use disorders identification tests (AUDIT, DUDIT), and Flanagan's Quality of Life Scale (QoLS).

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<sup>1</sup> A part of the results from the Study 1 was presented at the conference; see the reference:

Dimoski, J., Tucaković, L., Nedeljković, B. (2021). Alcohol use, drug use, and perceived quality of life: The predictive role of Disintegration. *Current Trends in Psychology, Faculty of Philosophy, Novi Sad, 28-30 October*. Book of Abstracts (p. 160-161). ISBN 978-86-6065-677-5

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The results showed that Disintegration predicts higher levels of problem alcohol and drug use, and lower quality of life, over and above the Big Five traits, thus increasing the proportion of explained variance by 3% and 1%, respectively. In the second study (N = 537), we used a 10-item measure of Disintegration (DELTA-10), a 60-item form of HEXACO, and a Serbian version of the Modified and Revised Experiences in Close Relationship scale (SM-ECR-R). The results showed that Disintegration predicts higher levels of avoidance and anxiety in close relationships over and above HEXACO traits, with an incremental contribution in the explained variance of 2% and 11%, respectively. In sum, our findings suggested that the Disintegration trait, assessed by either the shorter or longer measure, accounts for unique variance in individual, wellbeing-related outcomes, and dyadic functioning-related outcomes. The limitations and future directions are discussed.

*Keywords:* Schizotypy, Personality traits, Substance use, Quality of life, Adult attachment

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## Introduction

### Disintegration and basic personality traits

Psychosis proneness, psychotic-like, and schizophrenia-spectrum symptoms are some of the terms found in the literature used to mark schizotypal features. Even though these manifestations are usually seen as a part of disorders, a body of literature points out that these features are arrayed along a broad continuum – from normal and subclinical variations to clinical manifestations – and, accordingly, some scholars claim they should be considered a personality trait (see Edmundson et al., 2011; Kwapil & Barrantes-Vidal, 2015; Watson et al., 2008). Recently, Knežević et al. (2017) introduced the Disintegration trait as a (re)conceptualization of psychosis proneness features. This trait, normally distributed in the general population, encompasses nine sub-traits: perceptual distortions, magical thinking, enhanced awareness, paranoia, mania, flattened affect, somatoform dysregulations, depression, and general executive impairment. Their approach in framing these features was based on a series of factor analyses of almost one thousand indicators/items found in various measures of schizotypal, schizophrenia-spectrum, and psychotic phenomena. For that reason, the sub-traits of Disintegration are fairly parallel to certain dimensions or fall under the factors found in other models. More precisely, perceptual distortions, magical thinking, enhanced awareness, paranoia, and somatoform dysregulations represent the positive, flattened affect refers to the negative, and general executive impairment represents the disorganized dimension of schizotypy (see Debbané & Barrantes-Vidal, 2015; Kwapil et al., 2018). The rest two sub-traits of Disintegration – depression and mania – correspond to emotional distress and excitement factors of schizophrenia-spectrum symptoms, respectively (see van der Gaag et al., 2006). Although Disintegration is a complex construct, the core features of the trait can be understood, largely simplified, as the tendency to see connections between seemingly unrelated phenomena (Knežević et al., 2017), whether such relations could truly exist or not. Disintegration trait was proposed as the

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measure of individual differences, related to but irreducible to the Big Five (Knežević et al., 2016) and HEXACO models (Knežević et al., 2022).

A traditional view on the nature of personality subsumes that the broad space of individual variations could be presented by five (i.e., *the Big Five model*, McCrae & John, 1992; *the Five-Factor model*; Goldberg, 1990) or six basic personality traits (i.e., the HEXACO model; Lee & Ashton, 2004), depending on the model of reference. In both cases, Extraversion refers to liveliness, positive emotions, and enjoyment in social interactions, the Agreeableness trait pertains to kindness and compliant attitudes toward others, while Conscientiousness subsumes self-discipline, achievement orientation, and planning. Openness to experience is the domain that comprises intellectual and artistic aspirations. Even though these traits are labeled the same way in concurrent models, the content they cover is somewhat different (see Lee et al., 2005), which we will not elaborate on in detail. However, the difference between Neuroticism from the Big Five (or Emotional stability, as an inversely directed dimension, sometimes labeled so in five-factorial measures) and Emotionality from the HEXACO is worth noting. While Neuroticism subsumes emotional instability, the propensity to experience negative emotions and to react with anger and impulsive acts (DeYoung et al., 2007), Emotionality mainly pertains to proneness to feel fear and anxiety and the need for emotional support (Lee & Ashton, 2018). Lastly, Honesty-humility, the dimension unique to the HEXACO model, describes selfish, manipulative, and rule-breaking tendencies, therefore, is primarily relevant in explaining the dark side of personality and criminal behavior (Međedović, 2014a; Nedeljković & Tucaković, 2022).

The outcomes related to Disintegration and basic personality traits

A body of literature showed that basic personality traits have a firm potential to explain individual differences in everyday behavior, experiences, and the outcomes related to an individual or their connections with others. For example, Neuroticism was found to be related to maladaptive emotion-focused coping (Agbaria & Mokh, 2022), elevated reactivity to daily stressors

(Bolger & Schilling, 1991), alcohol and drug use (Sher et al., 2000), poorer self-perceived quality of life (Steel et al., 2008), marital quality and satisfaction with marriage (Lavee & Ben-Ari, 2004). Extraversion and Agreeableness are related to subjective well-being, higher social support, and higher satisfaction in relationships with family, friends, and emotional partners (Swickert et al., 2010; Tov et al., 2016). Conscientiousness was found to be associated with academic achievement (Chamorro-Premuzic & Furnham, 2003), avoiding risk behaviors, planning, and future concerns (Roberts et al., 2005), friendship quality (Lansford et al., 2014), and less avoidance and anxiety in close relationships (Stanković et al., 2022). Lastly, Openness to experience was shown to be related to divergent thinking, creative achievements in arts and science, and risk-taking (Kaufman et al., 2016; Nicholson et al., 2005).

For a vast majority of the abovementioned outcomes, there is no data on their relationship with Disintegration. On the other hand, there are some findings from the studies that used other measures of schizotypy. There is evidence that high (positive) schizotypy longitudinally predicts poorer social adjustment and increases the chances of alcohol and drug abuse/dependence (Kwapil et al., 2013). Also, there are cross-sectional findings that schizotypy is associated with lower satisfaction with life (Abbott et al., 2012). However, when it comes to dyadic functioning, there are available data on Disintegration. Stanković et al. (2022) reported that Disintegration is positively related to avoidance and anxiety in close relationships, although they have not addressed the relative importance of these connections compared to other personality traits. In contrast, some research that used the Disintegration model of schizotypy provided a piece of valuable knowledge on the incremental validity of this trait. For example, there are findings that Disintegration improves the Five-Factor model in discriminating all personality disorders (Šaula-Marojević, 2012) and predicts subclinical narcissism over and above the Big Five traits (Lazarević et al., 2021). Some other studies indicated this trait accounts for unique variance, not captured by the HEXACO model, in lower academic achievement (Janošević & Petrović,

2018) and a higher propensity to non-committal and diverse sexual activities (Dinić & Knežević, 2009).

### Present research aim and hypothesis

Previous studies provided valuable knowledge on the relationship between Disintegration and a broad set of relevant outcomes. Considering the theoretical background of the trait, we might assume there are many psychological phenomena in which Disintegration could have a role. Therefore, we selected some of the variables whose relations with the Disintegration trait are not yet clear enough. In this research, we examine whether Disintegration could have a unique contribution in explaining the variance in two different types of outcomes if the basic personality traits from two traditional models are taken into account. Study 1 addresses the issue of whether Disintegration can explain the unique variance in individual-level, wellbeing-related outcomes (problem alcohol and drug use and quality of life) over and above the Big Five model. Study 2 focuses on whether Disintegration can explain the unique variance in dyadic-level functioning outcomes (avoidance and anxiety in close relationships) over and above the HEXACO model. In the cause of increasing the robustness of the findings, apart from varying the model of basic personality traits, we also vary the assessment of Disintegration by applying the longer and the shorter form of the instrument in Studies 1 and 2, respectively. Although examining the role of Disintegration is our primary aim, we are almost equally focused on the relationships between basic personality traits and the outcomes, including the possible influence of Disintegration on these associations. For both studies, we hypothesized that Disintegration would predict the outcomes over and above the basic personality traits.

## Study 1

### Participants and procedure

The study involved 300 participants (aged 18 to 68, 71% females). The data was collected online using the *Google Forms* platform. The participants were invited to participate in the research via social networks. All participants joined the study anonymously and voluntarily and provided informed consent. The study was conducted in line with the 1964 Declaration of Helsinki and its later amendments.

### Instruments

#### *Big Five Inventory (BFI-10)*

The 10-item Big Five Inventory (BFI-10; Rammstedt & John, 2007; for Serbian adaptation see Pejić et al., 2014) was used to measure Extraversion, Neuroticism, Agreeableness, Conscientiousness, and Openness. Each trait was assessed by the two items given on a 5-point scale (from 1 = *strongly disagree* to 5 = *strongly agree*).

#### *DELTA instrument*

Disintegration was assessed by the DELTA instrument (Knežević et al., 2017). This measure includes 20 items (e.g., "*Sometimes I have an impression that my feelings are frozen*") given on a 5-point scale (from 1 = *strongly disagree* to 5 = *strongly agree*).

#### *The AUDIT (Alcohol Use Disorders Identification Test)*

The AUDIT (Alcohol Use Disorders Identification Test; Babor et al., 2001) was used to assess problem alcohol use. The questions refer to the frequency and quantity of alcohol consumption, binge drinking, and negative consequences of alcohol use. Respondents give their answers to eight questions (e.g., "*How often do you have a drink containing alcohol?*") on a 5-point scale (from 0 = *never* to 4 = *four or more times a week*) and two questions (e.g., "*Have you or*

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*someone else been injured because of your drinking?")* on a 3-point scale (0 = *no*; 2 = *yes, over the last year*; 4 = *yes, over the last year*).

#### *The DUDIT (Drug Use Disorders Identification Test)*

The DUDIT (Drug Use Disorders Identification Test; Berman et al., 2004) was used to assess problem drug use. This measure contains 11 items related to the frequency of drug use, drug-related behavior, and drug-related consequences. Nine questions (e.g., *"How often do you use drugs other than alcohol?"*) are given on a 5-point scale (from 0 = *never* to 4 = *four or more times a week*), and two questions (e.g., *"Have you or anyone else been hurt [mentally or physically] because you used drugs?"*) are given on a 3-point scale (0 = *no*; 2 = *yes, over the last year*; 4 = *yes, over the last year*).

#### *Flanagan's QoLS (Quality of Life Scale)*

Flanagan's QoLS (Quality of Life Scale; Flanagan, 1978) was used to assess the perception of the quality of life. The measure includes 15 items with the instruction for respondents to estimate on a 7-point scale (from 1 = *terrible* to 7 = *delighted*) how satisfied they are with each activity or relationship (e.g., *"Relationships with parents, siblings, and other relatives – communicating, visiting, helping"*).

The AUDIT, the DUDIT, and the QoLS were translated into Serbian by the first author for the purpose of this study. Minor ambiguities were resolved by consultation with the external collaborator, fluent in English.

The scores in all scales were calculated as the mean of responses on corresponding items, whereby in all cases, higher scores denote the higher values of the variables as labeled. Means, standard deviations, and Cronbach alphas are presented in Appendix A.

## Results

After the initial correlation analysis (see also Appendix A), we conducted three multiple regressions with problem use of alcohol and drugs and perceived quality of life as the criterion variables. In each case, the Big Five traits were entered as predictors (along with the sex and age to control their



effect) in the first step, while Disintegration was included in the second step. The results of the regressions are summarized in Table 1.

**Table 1**

The contribution of Disintegration to explaining problem alcohol and drug use, and quality of life over and above the Big Five traits

|                   | Alcohol use ( $\beta$ ) |        | Drug use ( $\beta$ ) |         | Quality of life ( $\beta$ ) |         |
|-------------------|-------------------------|--------|----------------------|---------|-----------------------------|---------|
|                   | Step 1                  | Step 2 | Step 1               | Step 2  | Step 1                      | Step 2  |
| Sex (male)        | .32**                   | .30**  | .37**                | .35**   | -.04                        | -.03    |
| Age               | -.13*                   | -.13*  | .14*                 | .14*    | -.14**                      | -.14**  |
| Extraversion      | .14*                    | .16**  | .07                  | .09     | .22**                       | .21**   |
| Neuroticism       | .00                     | -.04   | -.02                 | -.07    | -.34**                      | -.30*   |
| Agreeableness     | -.09                    | -.05   | -.08                 | -.04    | .14**                       | .12*    |
| Conscientiousness | -.20**                  | -.17** | -.14*                | -.11*   | .28**                       | .26**   |
| Openness          | -.04                    | -.04   | -.08                 | -.09    | .11*                        | .11*    |
| Disintegration    |                         | .19**  |                      | .19**   |                             | -.12**  |
| F                 | 8.11**                  | 8.55** | 11.33**              | 10.81** | 23.36**                     | 21.49** |
| $R^2$             | .16                     | .19    | .21                  | .24     | .36                         | .37     |
| $\Delta R^2$      |                         | .03**  |                      | .03**   |                             | .01*    |

*Note.* Sex is coded as Female = 0; Male = 1;  $R^2$  – squared multiple correlation;  $\Delta R^2$  – change of squared multiple correlation; \*\*  $p < .01$ ; \*  $p < .05$ .

Male sex, younger age, higher Extraversion, and lower Conscientiousness were predictive of a higher level of problem alcohol use and explained about 16% of the criterion variance. The Disintegration trait, included in the second step, was shown to be predictive of a higher level of problem alcohol use, over and above the Big Five traits. Similarly, problem drug use was predicted by the male sex, older age, and low Conscientiousness in the first step of analyses, which accounted for about 21% of the criterion variance. As in the case of problem alcohol use, the Disintegration trait, included in the next step, was shown to have a unique contribution in explaining the criteria (3% of the

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incremental variance in both cases). Interestingly, all personality traits from the Big Five model were the significant predictors of perceived quality of life (36% of the variance explained). This criterion was negatively predicted by age and Neuroticism and positively by all other traits. Disintegration predicted the perceived quality of life negatively, and the additional contribution in explaining the variance was quite small (1%), although significant.

## Study 2

### Participants and procedure

The sample involved 537 participants (aged 18 to 58, 51.5% females), recruited in the same way as described in Study 1. All participants joined the study anonymously and voluntarily and provided informed consent. The study was conducted in line with the 1964 Declaration of Helsinki and its later amendments.

### Instruments

#### *HEXACO Personality Inventory (HEXACO-60)*

The 60-item HEXACO Personality Inventory (HEXACO-60; Ashton & Lee, 2009; for Serbian adaptation see Međedović et al., 2019) was used to measure Extraversion, Emotionality, Agreeableness, Conscientiousness, Openness, and Honesty-humility. Each trait was assessed by the 10 items.

The 10-item form of the DELTA instrument (Knežević et al., 2017) was used to assess Disintegration.

#### *Experiences in Close Relationships scale (SM-ECR-R)*

A Serbian version of the modified and revised Experiences in Close Relationships scale (SM-ECR-R; Hanak & Dimitrijević, 2013) was used to assess two major dimensions of adult attachment: avoidance (e.g., "I prefer not to show how I feel deep down") and anxiety (e.g., "Sometimes persons with whom I feel close change their feelings about me for no about apparent reason"). Both dimensions were assessed by 18 items. This version of the

instrument assesses avoidance and anxiety experiences in close relationships in general, unlike the original one (ECR-R; Fraley et al., 2000), which is primarily directed to partnership relationships.

Items from all instruments were given on a 5-point scale (from 1 = *strongly disagree* to 5 = *strongly agree*). The scores were calculated as the mean of responses on corresponding items, whereby in all cases, higher scores denote the higher values of the variables as labeled. Means, standard deviations, and Cronbach alphas are presented in Appendix B.

## Results

We employed the same approach as in Study 1 by conducting two multiple regressions with avoidance and anxiety as criterion variables, and personality traits, sex and age as predictors. The results of regression analyses (see Table 2) are generally aligned with the results of the initial correlation analysis (see Appendix B), thus indicating that the contribution of particular personality traits in explaining the variance in avoidance and anxiety is mostly unique.

**Table 2**

The contribution of Disintegration to explaining avoidance and anxiety in close relationships over and above the Big Five traits

|                   | Avoidance ( $\beta$ ) |         | Anxiety ( $\beta$ ) |         |
|-------------------|-----------------------|---------|---------------------|---------|
|                   | Step 1                | Step 2  | Step 1              | Step 2  |
| Sex (male)        | -.12**                | -.11**  | -.07                | -.30    |
| Age               | .06                   | .07     | .00                 | .02     |
| Extraversion      | -.30**                | -.25**  | -.22**              | -.13**  |
| Emotionality      | -.22**                | -.25**  | .22**               | .16**   |
| Agreeableness     | -.15**                | -.13**  | -.06                | -.02    |
| Conscientiousness | -.12**                | -.09*   | -.14**              | -.06    |
| Openness          | -.14**                | -.16**  | -.03                | -.07*   |
| Honesty-humility  | -.08                  | -.03    | -.22**              | -.13**  |
| Disintegration    |                       | .18**   |                     | .39**   |
| F                 | 16.05**               | 16.36** | 20.33**             | 30.97** |
| $R^2$             | .20                   | .22     | .24                 | .36     |
| $\Delta R^2$      |                       | .02**   |                     | .11**   |

Note. Sex is coded as Female = 0; Male = 1;  $R^2$  – squared multiple correlation;  $\Delta R^2$  – change of squared multiple correlation; \*\*  $p < .01$ ; \*  $p < .05$ .

Female sex, higher levels of Extraversion, Emotionality, Agreeableness, Conscientiousness, and Openness were predictive of lower avoidance in close relationships and explained about 20% of the variance in this criterion. The inclusion of the Disintegration trait in the second step accounted for an additional 2% of the variance, with a positive contribution coming from this trait. Higher Extraversion, Conscientiousness, Honesty-humility, and lower Emotionality were found to be predictive of lower anxiety in close relationships, accounting for a total of 24% variance explained. Disintegration contribution, observed after this trait was included in the second step, was positive and quite large (11% of the variance). It is important to notice an interesting phenomenon not found in predicting avoidance. Namely, the

inclusion of Disintegration resulted in the Conscientiousness contribution becoming insignificant and the Openness contribution becoming significant (and negative) in predicting the variance of anxiety.

## Discussion

In this research, we aimed to provide additional evidence that Disintegration – a recently proposed but not widely recognized personality trait – is needed to supplement the variations in the broad space of individual differences usually seen through the lens of commonly used measures of basic personality traits such as the Big Five or the HEXACO. For that purpose, we selected some of the variables that could be theoretically considered as outcomes related to basic personality traits to test our hypothesis that Disintegration could have an incremental contribution in their prediction over and above other basic personality traits. To increase the representativeness and robustness of our findings, we employed the longer and the shorter measure of the Disintegration, combined with the Big Five and HEXACO models traits. Although we are primarily interested in the Disintegration role, our discussion as follows is comprehensive and clarifies the relations of the outcomes of interest with other personality traits as well.

In Study 1, problem alcohol and drug use, and perceived quality of life were used as criterion variables. Both addiction-related outcomes were predicted by high Disintegration and low Conscientiousness, while problem alcohol use was predicted by high Extraversion as well. There are several reasons why Conscientiousness might be associated with alcohol and drug use and related problems. People who score high on Conscientiousness are generally more responsible and self-disciplined and thus could be more able to resist the temptation to drink alcohol excessively, use psychoactive substances, or engage in risky behaviors. Accordingly, those individuals may be more likely to plan ahead and consider the potential consequences of their actions and therefore be less likely to engage in behaviors that could threaten their health or well-being. Indeed, previous studies support this consideration since they indicated that Conscientiousness is inversely related to alcohol and drug use

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(Martens et al., 2009; Turiano et al., 2012). The contribution of Extraversion in predicting problem alcohol (but not drug) use is quite expected. The use of alcohol, in contrast to drug use, is far more culturally supported, to a greater extent acceptable, and even expected in social gatherings and parties. If we take into account that sociability and liveliness are one of the main aspects of Extraversion, then the positive contribution of this trait to problematic alcohol use seems quite reasonable. Previous findings also showed that Extraversion is associated with alcohol use and binge drinking (Cheng & Furnham, 2013). Lastly, the role of Disintegration in both problem alcohol and drug use is a pretty intriguing finding. Such predictive contribution could be seen primarily through the assumed influence of Disintegration (as personality disposition) on detrimental outcomes rather than *vice versa*. Of course, our consideration of this relationship in terms of possible influence does not come without support. Although there are some findings in psychiatric patients showing that alcohol and drug use could trigger psychosis and increase the level of psychotic symptoms (see Gicas et al., 2022), we need to take into account that Disintegration trait subsumes normal and pre-psychotic features. Therefore, the "self-medication" hypothesis (Khantzian, 1997) seems like a more appropriate explanation of this relationship. According to this hypothesis, individuals with high levels of schizotypy may use alcohol and drugs to alleviate distressing symptoms associated with their condition. Moreover, there is longitudinal evidence that (positive) schizotypy increases the chances of alcohol and drug abuse/dependence (Kwapil et al., 2013).

In predicting quality of life in Study 1, all personality traits had a unique contribution in the direction that could be expected considering the nature of this construct and previous findings on the Big Five traits (e.g., Hicks & Mehta, 2018; Sadiković et al., 2018). Neuroticism and Disintegration negatively predicted the quality of life, while the contribution of all other personality traits was positive. This profile indeed describes the "positive personality" structure (de la Iglesia & Castro Solano, 2018), which could be depicted through the relative absence of psychopathological symptoms and the

presence of (desirable) dispositions such as high Extraversion, Agreeableness, Conscientiousness, and Openness that together serve as the foundation of higher wellbeing (Ozer & Benet-Martínez, 2006).

In Study 2, we found that Disintegration predicted both avoidance and anxiety in close relationships. The negative contributions of Extraversion in predicting both variables indicated that introverted individuals have more tendencies to feel discomfort in close relationships. On the other hand, the results showed that those with high Emotionality are more likely to be less avoidant, probably due to their need for support, while at the same time, they are more likely to be more anxious in close relationships, which probably arises from their timidity. Our results also indicated that low Agreeableness and Conscientiousness predict higher avoidance. That finding could be seen as the product of antagonistic tendencies and less concern for own obligations and responsibilities toward others, which are the features found in the negative poles of these two traits, likely to be reflected in close relationships as well. The negative contribution of Openness in predicting avoidance is likely to arise from the need for closure, which is closely related to low Openness (Onraet et al., 2011). However, the negative contribution of this trait in predicting anxiety seems more intriguing because it occurs when Disintegration is included as a predictor. Some previous findings might help us understand this phenomenon. A nuanced exploration of HEXACO Openness domain facets showed that unconventionality is positively associated with Disintegration, while inquisitiveness is related to higher wellbeing (Tucaković & Nedeljković, 2022). Therefore, it is plausible to understand that Disintegration likely extracts the variance of unconventionality from Openness, so the remaining variance relates negatively with anxiety. On the other hand, the opposite effect was observed for Conscientiousness, which was found to predict anxiety negatively, whereas the unique contribution of this trait was absent if Disintegration was included. This phenomenon could be attributed to a positive relationship between these traits observed in this and earlier studies (e.g., Lazarević et al., 2021). Moreover, Međedović (2014b) showed that general executive dysfunction, which is one of the core features

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of the Disintegration trait, is to some extent mapped on the negative pole of Conscientiousness. Therefore, Disintegration, which is quite stronger related to anxiety, might take over the variance that is not unique to Conscientiousness and result in this trait being a non-significant predictor.

The results of Study 2 are broadly aligned with previous findings on the relationship between basic personality traits and dimensions of adult attachment (see Fraley et al., 2011; Manson, 2015). However, we find it necessary to clarify in more detail the role of Disintegration. The incremental contribution in predicting avoidant tendencies could be seen as quite expected if we take into account previous findings which indicated that schizotypy is related to greater attachment avoidance (e.g., Goodall et al., 2015; Tiliopoulos & Goodall, 2009), mistrust (Ross et al., 2002) and antagonism (Edmundson et al., 2011). On the other hand, the strong relationship between Disintegration and anxiety, which led to the high predictive contribution, might be surprising at first glance. However, almost the same strength of correlation was obtained in a recent study that employed these two measures (Stanković et al., 2022). In contrast, the strength of attachment anxiety association with other measures of schizotypy was found to vary from poor (e.g., with constricted affect) to strong (e.g., with cognitive disorganization), depending on the measure used and different aspects of the trait they cover (see Meins et al., 2008; Tiliopoulos & Goodall, 2009). Looking back at the content of the Disintegration, we need to take into account that this model includes paranoia, which could be seen as an extreme form of distrust. Combined with an inevitable closeness that every relationship includes more or less, such a disposition is likely to create "push-pull" conflict, resulting in elevated anxiety that overwhelms the relationship experience.

## Limitations

Our research indicated that Disintegration has an incremental contribution in predicting all the outcomes we explored. However, there are some limitations worth noting. Although the incremental contribution of Disintegration over the Big Five traits in Study 1 could be seen as questionable due to the different



breadth of measurement of the traits (i.e., Disintegration assessed by 20 items, and each of the Big Five traits assessed by two items), we could provide some arguments opposing such consideration. First, there are findings that BFI-10 has a sufficient measurement breadth, covering around 70% of the variance captured by the longer Big Five measures (Rammstedt & John, 2007). Second, as we mentioned earlier, our results regarding this measure are highly aligned with previous findings that used more comprehensive instruments and could be seen to reflect genuine relations. Third, all the Big Five traits, despite being assessed by the brief measure, had a unique contribution in predicting quality of life, and even so, Disintegration accounted for an additional variance. Anyway, we encourage future studies to replicate our findings by employing a more comprehensive measure of the Big Five or Five-Factor model. On the other hand, the potential shortcoming of using instruments with different measurement breadth does not apply to Study 2, where the HEXACO traits and Disintegration were assessed by ten items each – yet Disintegration predicted avoidance and anxiety in close relationships over and above the HEXACO model. Of course, non-probabilistic sampling, which resulted in relatively young samples, is also one of the limitations, in particular, because schizotypal features decrease with age in the general population. Therefore, the sample type restricts a broader generalization of the findings. Ultimately, we need to stress that the cross-sectional self-report design of both studies is one of the major limitations, particularly for concluding about Disintegration influence on the examined outcomes. Future studies that will apply, for example, follow-up or experience sampling design, are needed to provide a reliable basis for considering potential influence.

## Conclusion

The research showed that Disintegration is related to higher levels of problem alcohol and drug use, lower quality of life, and more avoidance and anxiety in close relationships. Since there was an incremental contribution in predicting all those variables over and above basic personality traits from the Big Five or

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HEXACO model, these associations could be considered substantial and robust. From the standpoint of personality assessment, we consider these findings as additional support for understanding Disintegration as the basic personality trait that captures the unique variance not framed by either the Big Five or the HEXACO and as a valuable supplement to these models with the incremental predictive role. Also, we need to conclude that our research showed that Disintegration could be seen as a trait equally important for two types of outcomes: individual, wellbeing-related such as problem alcohol and drug use, and quality of life; and dyadic functioning related, such as avoidance and anxiety in close relationships.

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#### *Conflict of interest*

We have no conflicts of interest to disclose.

#### *Data availability statement*

Data files are available upon a reasonable request.

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## Appendix A

Descriptives, reliabilities and, correlations between all Study 1 variables

|                      | 1      | 2      | 3      | 4      | 5      | 6      | 7     | 8      | 9     | 10     | 11    |
|----------------------|--------|--------|--------|--------|--------|--------|-------|--------|-------|--------|-------|
| 1. Sex (male)        |        |        |        |        |        |        |       |        |       |        |       |
| 2. Age               | .27**  |        |        |        |        |        |       |        |       |        |       |
| 3. Extraversion      | -.03   | .07    | (.33)  |        |        |        |       |        |       |        |       |
| 4. Neuroticism       | -.24** | -.22** | -.07   | (.60)  |        |        |       |        |       |        |       |
| 5. Agreeableness     | .03    | .05    | .11    | -.25** | (.37)  |        |       |        |       |        |       |
| 6. Conscientiousness | -.02   | .19**  | .15*   | -.17** | .17**  | (.53)  |       |        |       |        |       |
| 7. Openness          | .08    | -.06   | .02    | -.02   | -.02   | -.03   | (.30) |        |       |        |       |
| 8. Disintegration    | .03    | -.08   | -.17** | .32**  | -.29** | -.27** | .01   | (.90)  |       |        |       |
| 9. Alcohol use       | .27**  | -.07   | .08    | .01    | -.10   | -.23** | .00   | .23**  | (.86) |        |       |
| 10. Drug use         | .41**  | .23**  | .04    | -.01   | -.07   | -.12*  | -.05  | .19**  | .22** | (.90)  |       |
| 11. Quality of life  | .00    | -.01   | .30**  | -.40** | .29**  | .37**  | .11*  | -.35** | .13*  | -.16** | (.85) |
| <i>M</i>             |        | 25.94  | 3.25   | 3.08   | 3.35   | 2.91   | 3.61  | 2.19   | 0.70  | 0.37   | 3.61  |
| <i>SD</i>            |        | 8.22   | 0.91   | 1.08   | 0.95   | 0.91   | 1.00  | 0.77   | 0.62  | 0.66   | 0.68  |

*Note.* Sex is coded as Female = 0; Male = 1; *M* – mean; *SD* – standard deviation; Cronbach alpha coefficients are presented in parentheses on a diagonal; \*\*  $p < .01$ ; \*  $p < .05$ .

## Appendix B

Descriptives, reliabilities, and correlations between all Study 2 variables

|                      | 1      | 2      | 3      | 4     | 5      | 6      | 7      | 8      | 9     | 10    | 11    |
|----------------------|--------|--------|--------|-------|--------|--------|--------|--------|-------|-------|-------|
| 1. Sex (male)        |        |        |        |       |        |        |        |        |       |       |       |
| 2. Age               | .12**  |        |        |       |        |        |        |        |       |       |       |
| 3. Extraversion      | .04    | .16**  | (.75)  |       |        |        |        |        |       |       |       |
| 4. Emotionality      | -.53** | -.14** | -.17** | (.77) |        |        |        |        |       |       |       |
| 5. Agreeableness     | .00    | .12**  | .11**  | -.01  | (.71)  |        |        |        |       |       |       |
| 6. Conscientiousness | .02    | .14**  | .11**  | -.07  | -.03   | (.76)  |        |        |       |       |       |
| 7. Openness          | .05    | .11**  | .14**  | -.01  | .09*   | .05    | (.78)  |        |       |       |       |
| 8. Honesty-humility  | -.17** | .03    | -.02   | .11*  | .24**  | .14**  | .08    | (.74)  |       |       |       |
| 9. Disintegration    | -.18** | -.18** | -.30** | .26** | -.19** | -.29** | .02    | -.25** | (.82) |       |       |
| 10. Avoidance        | .01    | -.03   | -.31** | -.10* | -.20** | -.15** | -.19** | -.13** | .25** | (.82) |       |
| 11. Anxiety          | -.16** | -.12** | -.29** | .29** | -.14** | -.22** | -.10*  | -.22** | .53** | .30** | (.91) |
| <i>M</i>             |        | 28.58  | 3.29   | 3.15  | 2.89   | 3.55   | 3.68   | 3.57   | 2.34  | 2.26  | 2.29  |
| <i>SD</i>            |        | 6.68   | 0.71   | 0.76  | 0.68   | 0.70   | 0.79   | 0.76   | 0.83  | 0.55  | 0.87  |

*Note.* Sex is coded as Female = 0; Male = 1; *M* – mean; *SD* – standard deviation; Cronbach alpha coefficients are presented in parentheses on a diagonal; \*\*  $p < .01$ ; \*  $p < .05$ .

