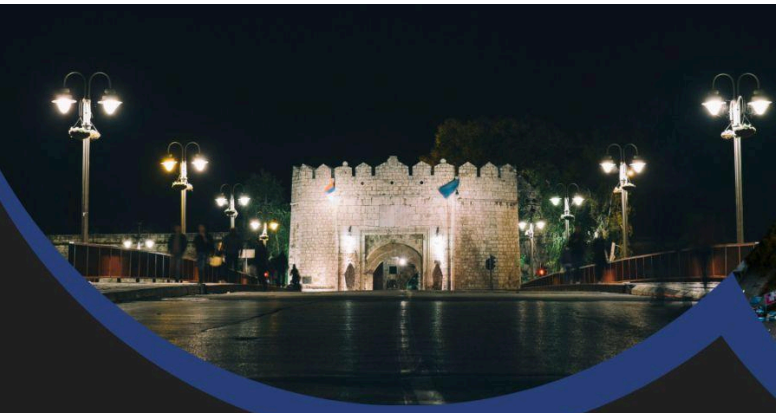

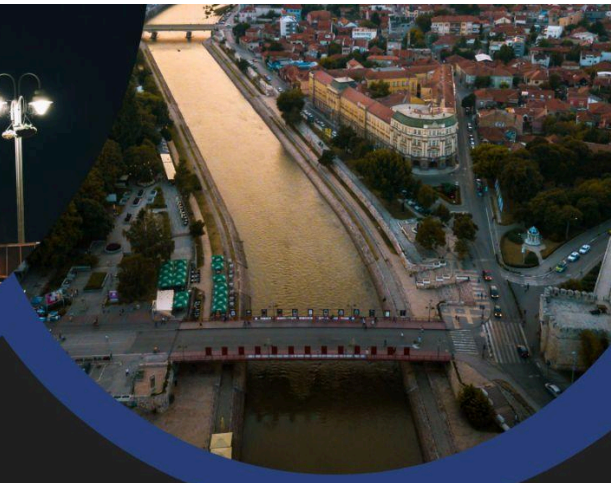

XVIII INTERNATIONAL CONFERENCE

DAYS OF APPLIED PSYCHOLOGY

CURRENT CHALLANGES IN PSYCHOLOGICAL SCIENCE

CONFERENCE PROCEEDINGS

Niš, Serbia
23rd and 24th September 2022

Organized by

Дани Примењене Психологије — Days of Applied Psychology

Department of Psychology, University of Niš

Ćirila and Metodija 2, 18010, Niš

Универзитет у Нишу — Филозофски факултет

Days of Applied Psychology
CURRENT CHALLENGES IN PSYCHOLOGICAL SCIENCE
Conference Proceedings

https://doi.org/10.46630/dpp.2023

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18th International Conference Days of Applied Psychology

CURRENT CHALLENGES IN PSYCHOLOGICAL SCIENCE

Conference Proceedings

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CONTENTS

FOREWORD

The Proceedings Book from the 18th International Conference Days of Applied Psychology titled "Current Challenges in Psychological Science" showcases a selection of papers meticulously curated from the presentations at the 18th International Conference “Days of Applied Psychology,” held on September 23rd & 24th, 2022, in an online format.

Rooted in tradition, this annual conference has been a flagship event since 2005, organised by the Department of Psychology at the Faculty of Philosophy, University of Niš, Serbia. The conference's inception was underpinned by the vision of fostering a platform for the convergence of researchers and practitioners, facilitating discussions that bridge the chasm between scientific exploration and pragmatic applications across diverse psychological domains. Since its beginning, the conference has welcomed participants of international provenance, a trend that steadily gains momentum with each passing year. Over recent years, the conference has particularly focused on not only disseminating scientific findings from varied psychological disciplines but also nurturing dialogue among scholars with diverse cultural and professional backgrounds.

This publication contains 12 reviewed original scientific papers. The authors of these articles come from 8 countries: Bosnia & Herzegovina, Bulgaria, India, Japan, Republic of North Macedonia, Romania, Serbia and Slovakia. The abstracts featuring the research results from these articles were presented at the conference as the part of the sessions: Personality and Individual Differences, Work, Organization & Mental Health, Protective Behaviours during the COVID-19 Pandemic, Psychometrics, Educational Psychology, Social Psychology, Motor Behaviour & Sports Psychology, Psychotherapy & Mental Health and two symposia: Forest Bathing Without the Forest: The Urban Nature Experience and Share Your Attitude: Mental Health Services, Asylum Seekers and Nationalism – Under the Veil of Personal and Some Other Factors.

Paper *Psychological Factors Involved in Criminal Recidivism* explores the intricate interplay of psychological attributes contributing to repeated criminal behaviours. This topic resonates as a vital investigation within the discipline of criminal psychology, seeking to unveil the underlying mechanisms driving persistent engagement in criminal activities.

Within the thematic section of Work, Organization & Mental Health, two papers make noteworthy contributions. *Work-Family Conflict and Turnover Intention: The Mediation Role of Optimism* shines a light on the interplay between work-family dynamics and the intention to leave a job, with optimism acting as a mediating factor. Simultaneously, the investigation into *Job Demands, Job Resources and Personal Resources as Determinants of Burnout of Healthcare Workers During COVID-19 Pandemic* sheds crucial insights into the occupational burnout experienced by healthcare personnel during times of crisis.

The strand of Protective Behaviours during the COVID-19 Pandemic explores pivotal dimensions of public health behaviours. *Sharing is (Not) Caring! Predicting Intent to Vaccinate Against COVID-19 by Emotional and Cognitive Factors* investigates the intricate interplay of emotions and cognition in predicting vaccination intent, and *Fear of COVID-19 and Personality Traits as Predictors of Motivation for Vaccination* addresses the interplay between psychological attributes and vaccination motivations,

The Psychometrics domain grapples with fundamental aspects of measurement in psychological research. *On Measuring Honesty: The Challenges of a Psychometric Approach to a Multidimensional Construct* underscores the complexities involved in capturing multifaceted constructs such as honesty. Simultaneously, the development of the Short Self-Disgust Scale represents a significant stride in operationalizing this emotional facet.

In Educational Psychology, the paper investigating *Barriers of Effective Study in Higher Education: Content Analysis of Students' Reports* foregrounds the nuanced challenges faced by students, thereby guiding educational interventions that foster effective learning.

Social Psychology delves into the intricate interplay of social status, emotions, and health. The paper exploring *Subjective Social Status and Health – The Mediating Role of Negative Emotions* underscores the role of negative emotions in linking social perceptions to health outcomes.

Motor Behaviour & Sports Psychology offers a significant perspective on the psychological underpinnings of sports performance. The inquiry into *Perfectionism in Sports as a Predictor of Sports Anxiety* augments our understanding of the multifaceted relationship between perfectionism and anxiety in sports contexts.

Within Psychotherapy & Mental Health, the *Effectiveness of Cognitive Behaviour Therapy on Stress Among Infertile Women: A Meta-Analysis* underscores the potential efficacy of therapeutic interventions in addressing stress among this specific population, thereby contributing to the advancement of evidence-based mental health practices.

The symposium titled Share Your Attitude: Mental Health Services, Asylum Seekers and Nationalism – Under the Veil of Personal and Some Other Factors features a paper that examines *Attitudes Toward Seeking Mental Health Services and Personality Traits in the Dog Eat Dog World*. This investigation sheds light on the complex interplay between mental health attitudes and personality dynamics in a sociopolitical context.

Current Status of "Forest Bathing Without Forest" Research in Japan - In an era marked by urbanisation, understanding the psychological impacts of urban-nature interfaces holds great significance. The symposium's contribution elucidates the burgeoning field of urban nature experiences and its potential for psychosocial well-being.

The compilation of these diverse inquiries bears testimony to the multifaceted nature of *Current Challenges in Psychological Science*. We hope that the knowledge and insights presented in this volume will be helpful to a broad audience of students, practitioners, and researchers. Conclusively, our deepest gratitude extends to the reviewers whose steadfast dedication significantly contributed to the excellence of this publication.

Niš, September 2023

Editors
Ivana Pedović, PhD
Miloš Stojadinović, MSc

SYMPOSIA

SYMPOSIUM
FOREST BATHING WITHOUT THE FOREST:
THE URBAN NATURE EXPERIENCE

UDC: 159.922.2:159.942(520)

CURRENT STATUS OF "FOREST BATHING WITHOUT FOREST" RESEARCH IN JAPAN

Harumi Ikei, Hyunju Jo & Yoshifumi Miyazaki
Chiba University, Japan

Abstract. The relaxing effects of forest bathing are empirically known in humans, and scientific findings on the topic are being accumulated. Recently, interest in the relaxing effects of indoor forest-derived stimuli has increased due to lifestyle changes during the COVID-19 pandemic. Our research team has been conducting studies on the psychological and physiological relaxing effects of forests on humans from both forest bathing (field experiments) and forest-derived stimuli targeting the five senses (laboratory experiments). In this paper, representative findings from several laboratory experiments will be introduced. These experiments were conducted on women in their twenties, in an artificial climate room with a soundproofing function, in which the temperature, humidity, and illuminance were adjusted to a constant level. The impression evaluation using the semantic differential method and the mood evaluation based on the profile of mood states were used as psychological indicators. Furthermore, the oxygenated haemoglobin concentration in the brain's prefrontal cortex by near-infrared spectroscopy and the parasympathetic and sympathetic nervous activities based on heart rate variability were used as physiological indicators. The results revealed that forest-derived olfactory, visual, auditory, and tactile stimuli increased subjective comfort and relaxation, improved mood states, calmed prefrontal cortex activity, increased parasympathetic nervous activity, and suppressed sympathetic nervous activity. Thus, forest-derived olfactory, visual, auditory, and tactile stimuli promote psychological and physiological relaxing effects. In the future, we aim to clarify individual differences and perform analyses using the law of initial values and behavioural characteristics.

Keywords: laboratory experiment, five senses, psychological index, physiological index, relaxing effects

1. Introduction

Rapid urbanisation since the Industrial Revolution has increased the average life expectancy (Dye, 2008) and improved living conditions (Vlahov et al., 2007). However, it has also caused negative environmental changes, such as increased traffic, air and water pollution, and human-induced climate change, putting modern people under stress (Patz et al., 2005). Computer proliferation and mobile information and communication technological development have also caused a new type of stress, i.e., "techno-stress" (Brod, 1984).

Under these situations, the relaxing effects brought by forests and other natural environments on humans are attracting attention. In Japan, the term *shinrin-yoku* ("forest bathing") was coined by Tomohide Akiyama in 1982, the then-director general of Japan's Forestry Agency (The Asahi Shimbun, 1982). *Shinrin-yoku* was invented to promote physical and mental health by literally "bathing in the forest," analogous to *kaisui-yoku* (sea bathing). In 2003, the term "forest therapy" was coined by Dr. Yoshifumi Miyazaki (Miyazaki, 2018), a forest bathing researcher, who reported "forest bathing supported by scientific data," with objective and scientific data reported using physiological indicators, such as brain and autonomic nervous activities. Previous studies on young men and women in their 20s have shown that walking or viewing in a forest for a short period facilitates psychological and physiological relaxation effects, such as increased subjective comfort and relaxation (Song et al., 2019a; Song et al., 2019b), improved mood states (Song et al., 2019a, 2019b), calmed prefrontal cortex activity (Park et al., 2007; Song et al., 2020), increased parasympathetic nervous activity (Kobayashi et al., 2015, 2018; Song et al., 2019a, 2019b), suppressed sympathetic nervous activity (Kobayashi et al., 2015, 2018; Song et al., 2019a, 2019b), and decreased stress hormone levels (Park et al., 2010; Kobayashi et al., 2017) compared to walking or viewing in an urban area. In addition, a series of lodging-type forest bathing experiments have reportedly improved immune function that lasts up to 1 month (Li et al., 2008).

However, time and physical constraints make it difficult for urban dwellers to reach a large-scale natural environment such as a forest daily. As of 2008, about half of the world's population lived in urban areas, which is expected to reach ~70% by 2050 (United Nations, 2018), increasing expectations in utilising the natural environment within cities. Furthermore, the COVID-19 pandemic in the previous years has forced people to live at home, and thereby, interest in the relaxing effects of forest-derived stimuli in indoor spaces is increasing.

Our research team has been investigating the psychological and physiological effects of nature on humans through both field and indoor experiments based on the "back-to-nature theory" (O'Grady & Meinecke, 2015; Miyazaki et al., 2011), which states that the body of a human under intense daily stress is physiologically relaxed by the stimulation provided by nature, such as forests, and that the body returns to its natural state as a human being. In this paper, we introduce and establish our psychological and physiological relaxation assessment methods and present representative findings on the physiological and psychological relaxation effects of forest-derived olfactory, visual, auditory, and tactile stimuli in indoor experiments.

2. Materials and Methods

2-1. Experimental Design

To collect fundamental data on the effects of forest-derived stimuli on humans, healthy women in their 20s were recruited. During the menstrual cycle, females secrete estrogen and progesterone, which fluctuates significantly and affects the physiological response, especially the endocrine activity. Additionally, the menstruation-associated poor physical conditions can affect the physiological and psychological responses in the participants. That is why most of the studies on the physiological and psychological relaxing effects of nature on humans have been conducted primarily on young males in their 20s, who are more likely to control their physical conditions on the day of experimentation. Therefore, in the absence of studies including female physiological conditions, we recruited female

participants considering their menstrual cycle and associated physical conditions and conducted a series of studies among young females in their 20s.

A within-subject experiment was conducted in a soundproofed artificial climate chamber with constant temperature, humidity, and illumination. An example of a measurement scene is shown in Figure 1.

Figure 1. Example of the measurement scenery (olfactory stimulation experiment, modified from Ikei,

Song & Miyazaki, 2015).

2-2. Psychological Indicators

Semantic Differential Method. The semantic differential (SD) method is a measurement developed by psychologist C. E. Osgood (Osgood et al., 1957). Opposing adjective pairs, such as "like–dislike," are placed at both ends of the scale to evaluate an individual's impression of the event. In our experiment, 13 divided scales with three items were used as the simple SD method: comfort (comfortable–uncomfortable), relaxation (relaxed–tensed), and nature (natural–artificial).

Profile of Mood State. The profile of mood state (POMS) is a questionnaire developed by D. M. McNair and M. Lorr (McNair & Lorr, 1964) that can simultaneously evaluate six moods: tension–anxiety, confusion, anger–hostility, depression, fatigue, and vigour. Translations have progressed worldwide, and a Japanese version was created in 1990 (Yokoyama et al., 1990). The year 2012 saw the release of POMS2 (Heuchert & McNair, 2012), a 35-item shortened and revised version, and the Japanese version was updated in 2015 (Yokoyama & Watanabe, 2015).

2-3. Physiological Indicators

There are generally four main indices for measuring human physiological responses: 1) the brain, 2) the autonomic nervous system, 3) the endocrine, and 4) immune system activities. Our research team simultaneously measures 1) brain activity (oxy-haemoglobin [oxy-Hb] concentrations in the left and right prefrontal cortices using near-infrared spectroscopy [NIRS]) and 2) autonomic nervous activity (sympathetic and parasympathetic nervous activities using heart rate variability (HRV)) during indoor experiments to evaluate the effects of nature-derived stimuli on human physiological responses.

Brain Activity. NIRS is used to measure the oxygenated haemoglobin concentration in the prefrontal cortex to assess brain activity (Fox & Raichle, 1986; Boas et al., 2014). NIRS is a method of measuring brain activity over time using near-infrared optical absorption properties of oxygenated and deoxygenated haemoglobin in the blood. The oxygenated haemoglobin concentration reflects the oxygen supplied to the tissues, which increases during activity and decreases during relaxation. To measure brain activity by NIRS, the prefrontal cortex, which increases during mental arithmetic and decreases during relaxation, is frequently used. The forehead area has the advantage of being free of hair, facilitating an easy measurement. A probe is attached to the surface of the participant's forehead using a double-sided tape, from which near-infrared light is irradiated and the returned light is detected. Compared to an electroencephalogram, this method requires less restraint and burden on the participant and has the advantage of measuring the activity state of the measurement site every second.

Autonomic Nervous Activity. For autonomic nervous activity, HRV measurements that can independently assess sympathetic and parasympathetic nervous activities were used (Task Force of the European Society of Cardiology the North American Society of Pacing Electrophysiology, 1996; Sawada et al., 1997). Although the heart seems to beat regularly, fluctuation (variability) may be observed in the time interval between beats. Frequency analysis of heart rate variability detects peaks of high-frequency (HF) and low-frequency (LF) components. HF reflects increased parasympathetic activity during relaxation, whereas LF/HF or LF/(LF/(LF+HF)) reflects increased sympathetic activity during stress and arousal. Heart rate intervals are commonly measured using a portable electrocardiograph with three electrodes placed on the chest. In recent years, smaller and fingertip pulse wave devices have been developed and used for different experimental protocols.

3. "Forest Bathing without Forest" Research in Japan

3-1. Olfactory Stimulation Experiments

The psychological and physiological relaxing effects of the fragrance of essential oil extracted from the branches and leaves of the Japanese cypress (*Chamaecyparis obtusa*) were investigated (Ikei, Song & Miyazaki, 2015). Two microliters of essential oil (Japanese cypress leaf oil) extracted from cypress branches and leaves through steam distillation were placed in an odor bag (24 L) and set inside a custom-made odor supply device. The control oil for comparison has no odor (air).

Thirteen female university students (M = 21.5 years, SD = 1.0 years) sniffed an odor supplied at a flow rate of 3 L/min by an odor supply device for 90 seconds after closed-eye rest. Physiological indices were continuously measured from the start of rest to the end of stimulation. Following the olfactory stimulation, the participants answered a questionnaire.

The participants rated the sensory intensity of the fragrance as “weak odor” to “effortless odor.”

Results demonstrated that olfactory stimulation using Japanese cypress leaf oil significantly enhanced subjective comfort compared to controls (Figure 2). In physiological indices, it significantly decreased the oxy-Hb concentration in the right prefrontal cortex and calmed the prefrontal cortex activity (Figure 3). The parasympathetic nervous activity, which increases during relaxation, was significantly increased by olfactory stimulation with Japanese cypress leaf oil compared to controls (Figure 4). The aroma of Japanese cypress leaf oil was found to have psychologically and physiologically relaxing effects, such as increasing subjective comfort, calming the prefrontal cortex activity, and increasing the parasympathetic nervous activity.

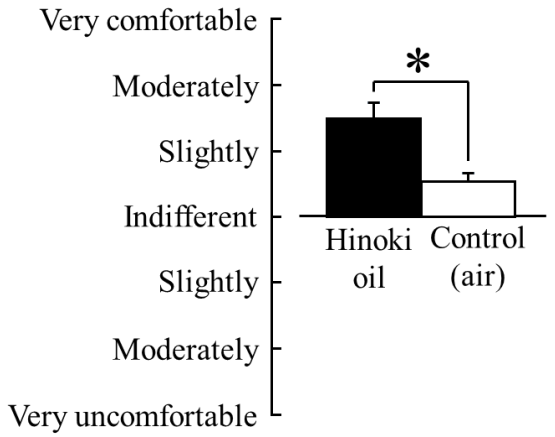

Figure 2. Olfactory stimulation with Japanese cypress leaf oil increases subjective comfort (modified from: Ikei, Song & Miyazaki, 2015). $N = 13$, mean ± standard error, $*p < .05$ as determined by Wilcoxon signed-rank test (one-sided).

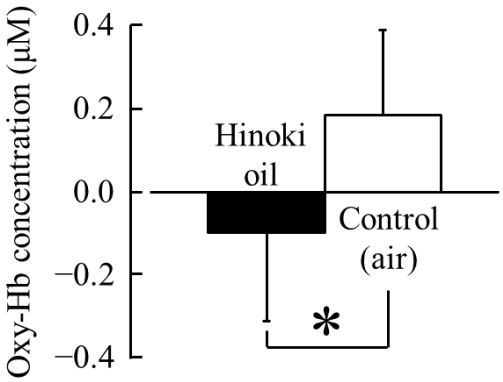

Figure 3. Olfactory stimulation of Japanese cypress leaf oil decreases oxy-Hb concentrations in the right prefrontal cortex (modified from Ikei, Song & Miyazaki, 2015). $N = 12$, mean ± standard error, $*p < .05$ as determined by paired *t*-test (one-sided).

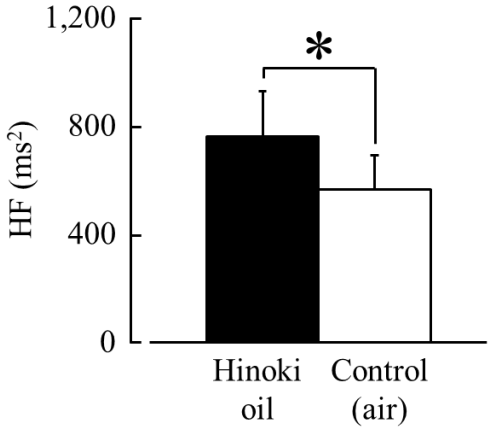

Figure 4. Olfactory stimulation of cypress leaf oil increases parasympathetic nervous activity (modified from Ikei, Song & Miyazaki, 2015). $N = 12$, mean ± standard error, $*p < .05$ as determined by paired *t*-test (one-sided)

Other studies on olfactory stimuli include wood chips (Ikei, Song, Lee & Miyazaki, 2015), wood-derived components (Ikei et al., 2016; Joung et al., 2014), fresh rose flowers (Igarashi, Song, Ikei, Ohira & Miyazaki, 2014), and rose and orange essential oils (Igarashi, Ikei, Song & Miyazaki, 2014) and their psychological and physiological relaxing effects.

3-2. Visual Stimulation Experiments

The psychological and physiological relaxing effects of viewing a forest image were evaluated using a large display (Song, Ikei, & Miyazaki, 2018). A metasequoia (*Metasequoia glyptostroboides*) forest landscape was used as the forest image, and an urban landscape of Shinjuku in Tokyo was used as the control image. The display was a 4K-compatible high vision liquid crystal display television with a width of 1872 mm, the height of 1053 mm, and pixel resolution of 3840 × 2160 (85V type, TH-85AX900 by Panasonic, Osaka, Japan), placed 1.4 m away from the participants.

Seventeen female university students (M = 21.1 years, SD = 1.0 years) were seated at rest in a chair while viewing the grey image, which was replaced by the forest or control image, respectively, for 90 seconds. Physiological indices were measured continuously from the start of rest to the end of stimulation. After the visual stimulation, the participants answered a questionnaire.

Results revealed that visual stimulation of the forest image significantly increased subjective comfort, relaxation, and nature compared to the control. In physiological indices, it significantly decreased the oxy-Hb concentration in the right prefrontal cortex. The visual stimulation with a forest image produced psychological and physiological relaxation effects.

As for other visual stimuli, the psychological and physiological relaxing effects of fresh roses (Song et al., 2017; Ikei, Komatsu, Song, Himoro & Miyazaki, 2014), potted pansies (Igarashi et al., 2015), foliage plants (Ikei, Song, Igarashi, Namekawa & Miyazaki, 2014), and wooden wall images (Ikei et al., 2020; Nakamura et al., 2019) have been investigated.

3-3. Auditory Stimulation Experiments

The psychological and physiological relaxing effects of a murmuring brook in a forest were evaluated (Jo et al., 2019). The auditory stimulus was the sound of a murmuring brook in the Togakushi forest in Nagano Prefecture, Japan, and the control group listened to the sound of traffic at a Shibuya intersection in Tokyo. The sounds were recorded using a high-resolution sound recorder.

Twenty-nine female university students (M = 22.3 years, SD = 2.1 years) listened to forest or control sounds through headphones for 60 seconds each after resting with their eyes closed.

Results showed that forest sound significantly increased subjective comfort, relaxation, and nature compared to control sound. It also significantly decreased the negative mood scales of tension–anxiety, depression–dejection, anger–hostility, fatigue, and confusion, and significantly increased the positive mood scale of vigour. In physiological indices, it significantly decreased the oxy-Hb concentration in the left and right prefrontal cortices and significantly decreased the sympathetic nervous activity that increases during stress. The sound of a murmuring brook in a forest was found to have a psychologically and physiologically relaxing effect by increasing subjective feelings of comfort and relaxation, improving mood states, calming the prefrontal cortex activity, and decreasing the sympathetic nervous activity.

3-4. Tactile Stimulation Experiments

The psychological and physiological relaxing effects of palm contacting with wood were investigated (Ikei et al., 2017a). The wood was white oak (*Quercus alba*), a typical

hardwood, and six types of wood plates were used: unpainted solid wood, oil-coated wood, glass-coated wood, urethane-coated wood, and thick urethane-coated wood.

A total of 18 female university students (M = 21.7 years, SD = 1.6 years) were asked to touch six types of wood plates with their right hand. Touching solid wood increased subjective comfort and relaxation, decreased left and right prefrontal cortex activity, and increased parasympathetic nervous activity. Thus, solid wood was found to produce psychological and physiological relaxation effects compared to various types of painted wood.

Regarding other tactile stimuli, the psychological and physiological relaxing effects of palm (Ikei et al., 2017b; Ikei et al., 2018a; Ikei et al., 2019) and feet contacts (Ikei et al., 2018b; Ikei & Miyazaki, 2020) have been clarified for cypress and cedar, which are typical Japanese conifers.

4. Prospects

In the previous section, we presented an example of a "Forest Bathing without Forest" study in Japan. Here, we will introduce an approach regarding individual differences, which will be a major issue in this research field in the future.

Investigating the effects of forests and other natural environments on humans is known to be associated with large individual differences in data; however, no standard approach has been proposed. On the other hand, in forest bathing research, attempts have been made to elucidate individual differences from the "law of initial value" perspective. The "law of initial values" was proposed by Wilder (1931; 1967) based on the principle that the response direction to a stimulus is often due to its initial value, i.e., the higher the initial values, the smaller the responses to stimuli, promoting physiological functions and larger responses to stimuli that inhibit them.

Song et al. (2015) investigated individual differences in physiological relaxation effects related to forest therapy from the "law of initial value" perspective and showed that individual differences are not just variations but are physiological adjustment effects. The forest therapy experiment involved walking for 15 minutes in the forest and urban areas in eight locations across Japan. The participants in each experimental location included 12 male university students in their twenties, with a total of 92 participants (M = 21.5 years, SD = 1.7 years), and the indicators measured were diastolic blood pressure and pulse rate. For each participant, [value after walking] − [value before walking] was calculated for diastolic blood pressure; this showed that most participants experienced decreased blood pressure after walking in the forest. However, the blood pressure increased in some participants, showing a great individual variation. The "law of initial value" was therefore applied, and the relationship between the absolute value for the participant's blood pressure before walking in the forest (the initial value) and the changes, i.e., [value after walking] − [value before walking], was investigated. The initial value was found to be negatively correlated with the change value, indicating that blood pressure decreased after walking in the forest in participants with high initial values and increased in those with low initial values. A similar relationship was found between the initial and changed pulse rate. In contrast, the initial value was not significantly correlated with the changed value when the same participants walked in urban areas. Thus, walking in the forest entailed physiological adjustment effects that brought the diastolic blood pressure and pulse rate closer to their normal values.

In addition, regarding participants, we have mainly targeted healthy participants in their twenties to date. In the future, we believe scientific data should be obtained from highly stressed participants. Currently, we are shifting our study to patients with gambling disorder

(Ochiai et al., 2020), spinal cord injury (Ochiai et al., 2017), elderly rehabilitation (Song, Ikei Nara, Takayama, & Miyazaki, 2018), and hypertensive (Ochiai et al., 2015; Song, Ikei, & Miyazaki, 2017). Starting in 2022, collaborative research has been conducted targeting children with developmental disabilities. From the perspective of preventive medicine, this field has a major role to play in improving the quality of life, which is declining in various highly stressed individuals. In the future, we hope to establish an academic system, accumulate scientific data, and return the results to society as a practical science.

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SYMPOSIUM
SHARE YOUR ATTITUDE: MENTAL HEALTH SERVICES, ASYLUM SEEKERS AND NATIONALISM – UNDER THE VEIL OF PERSONAL AND SOME OTHER FACTORS

UDC: 159.923.2:615.851

ATTITUDES TOWARD SEEKING MENTAL HEALTH SERVICES AND PERSONALITY TRAITS IN THE DOG EAT DOG WORLD

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Abstract. The main goal of this study was to examine whether social dominance orientation could be predicted based on personality traits and attitudes toward seeking mental health services. The data was collected using Social Dominance Scale, Big 5+2 Short version, and Inventory of Attitudes Toward Seeking Mental Health Services, which consists of three subscales: Psychological Openness, Help-seeking Propensity, and Indifference to Stigma. Participants were mostly from Southern Serbia ($N = 283$), aged 18-60 years ($M = 25.84$, $SD = 6.58$), 79% of whom were females. The research results showed that Model 1 which consists of personality traits is statistically significant, and explains 16.3% of the total variance of the dependent variable ($R^2 = .163$, $F(7, 276) = 7.684$, $p < .00$). Statistically significant predictors of Social dominance orientation seen in Model 1 were Positive Valence ($\beta = .292$, $p < .001$), and Openness ($\beta = -.249$, $p < .000$). The Second Model which consisted of personality traits, and attitudes toward seeking mental health services was statistically significant as well, and explained 22.6% of the total variance of the dependent variable ($R^2 = .226$, $F(3, 273) = 7.451$, $p < .00$). Openness ($\beta = -.180$, $p < .005$) and Positive Valence ($\beta = .223$, $p < .002$) were, once again, statistically significant predictors of Social Dominance Orientation, as well as Psychological Openness ($\beta = -.231$, $p < .001$). These results point out 32 specific characteristics which can give us deeper insight into the Social Dominance Orientation and their further relation.

Keywords: social dominance orientation, Big Five, mental health services, psychological openness

INTRODUCTION

Despite significant variations in the degree of oppression from one society to another, it seems that many societies share the basic social-psychological elements that contribute to inequality: socially shared myths that define 'superior group' and 'inferior group' and that attempt to justify this distinction and the policies that 'should' follow from it (Pratto, Sidanius, Stallworth, Malle, 1994). Based on these assumptions, and postulates presented in their work, Pratto et al. (1994) developed a measure and defined Social dominance orientation (SDO) which represents the extent to which one desires that one's in-group

dominate and be superior to out-groups. It is considered to be general attitudinal orientation toward intergroup relations, reflecting whether one generally prefers such orientation to be equal, versus hierarchical, that is, ordered along a superior-inferior dimension. The theory postulates that people who are more social-dominance oriented will tend to favour hierarchy-enhancing ideologies and policies, whereas those lower on SDO will tend to favour hierarchy-attenuating ideologies and policies. Often, people who score high in SDO adhere strongly to belief in a "dog-eat-dog" world (Levin, Federico, Sidanius, & Rabinowitz, 2002). SDO is thus the central individual difference variable that predicts a person's acceptance or rejection of numerous ideologies and policies relevant to group relations (Pratto, et al.1994).

In 2015. Ho, Sidanius, Kteily, Sheehy-Skeffington, Pratto, Henkel, Foels, and Stewart (2015) presented a new conceptualization and measurement of social dominance orientation. In contrast to previous measures of social dominance orientation that were designed to be unidimensional, the new measure (SDO7) embeds theoretically grounded subdimensions of SDO-Dominance (SDO-D) and SDO-Egalitarianism (SDO-E). SDO-D constitutes a preference for systems of group-based dominance in which high status groups forcefully oppress lower status groups. SDO-E constitutes a preference for systems of group-based inequality that are maintained by an interrelated network of subtle hierarchy-enhancing ideologies and social policies.

When talking about the attitudes toward seeking mental health services, we're looking into three different factors. The psychological openness factor reflects the extent to which individuals are open to acknowledging psychological problems and to the possibility of seeking professional help for themselves (Mackenzie, Knox, Gekoski, & Macaulay, 2004). The help-seeking propensity factor reflects the extent to which individuals believe they are willing and able to seek professional psychological help. Each of the items was designed to assess perceived behavioural control that met inclusion criteria loaded on this factor. Finally, scores on the indifference to stigma factor reflect the extent to which individuals are concerned about what various important others might think should they find out that the individual was seeking professional help for psychological problems.

In developing the measure of the above-mentioned variable- IASMHS, Mackenzie et al. (2004) improved upon the earlier developed ATSPHH by making the measure more congruent with the Theory of Planned Behaviour. The IASMHS also improves upon the ATSPHH by replacing gender-specific pronouns with gender-neutral ones, expanding the range of responses from a 4-point to a 5-point Likert scale, changing the words psychiatrists and psychologists to professionals, and indicating that professionals refer to individuals trained to work with mental health issues. For consistency, terms such as emotional difficulty, mental health concerns, mental trouble, and personal difficulties were replaced with psychological problems.

The Big Five framework of personality traits has emerged as a robust and parsimonious model for understanding the relationship between personality and various academic behaviours (Komarraju, Karau, Schmeck, & Avdic, 2011). Conscientiousness is exemplified by being disciplined, organised, and achievement-oriented. Neuroticism refers to the degree of emotional stability, impulse control, and anxiety. Extraversion is displayed through a higher degree of sociability, assertiveness, and talkativeness. Openness is reflected in a strong intellectual curiosity and a preference for novelty and variety.

Aggressiveness, which was extracted as a factor on a Serbian sample, refers to being uncooperative and having less tolerance of frustration (Čolović, Smederevac, & Mitrović 2014). The Big Five +2 personality model presents two more variables in describing personality traits through the instrument developed on a Serbian sample - Positive and

Negative Valence. Positive Valence includes subscales Superiority and Positive view of oneself. Negative Valence includes Negative picture of oneself, and Manipulativeness.

Phelan and Basow (2007) reported that individuals high in SDO were more likely than those low in SDO to report the desire to maintain "social distance" from characters in vignettes who were described as having symptoms of mental illness. Such negative attitudes have important consequences on intentions to behave and actual behaviour (Bizer, Hart & Jekogian, 2012). In a 2006 survey, Pescosolido, Martin, Long, Medina, Phelan, and Link (2010) found that more than 62% of respondents indicated an unwillingness to "work closely on a job" with a person suffering from schizophrenia, while 47% indicated such an unwillingness with regard to a person suffering from major depressive disorder. Few studies have focused on the relationship between SDO and well-being, with inconsistent findings. SDO was negatively associated with well-being, as measured by emotion expression in the work of Van Hiel and Kossowska (2006), De Cremer et al. (2008) found that higher SDO can increase positive affect when people have the voice, and in the study by de Zavala et al. (2009), a null relationship was found (according to Shi, Chen, Wang, Teng, Yang, & Chen, 2021).

In the study of Ekehammar, Akrami, Gylje, and Zakrisson, (2004) correlation was displayed between SDO and Agreeableness, whereas the correlations between SDO and the other Big Five dimensions were all non-significant. Nicol and DeFrance (2016) showed in their research that for the two SDO facets and SDO total scale, Openness was the most important correlate, followed by the anticipated significant relation with Agreeableness. There were no studies covering the topic of association of SDO with Positive and/or Negative Valence as personality traits, nor SDO with the Attitudes towards seeking mental health using the IASMH Scale. In order to explore those relations on the domestic population, the hypothesis of this research is that the Attitudes towards seeking mental health services is the statistically significant predictor of SDO. Since the Positive and Negative Valence, as well as Aggressiveness are measured using the instrument specifically developed for the Serbian sample, the results of this research would be specific to our country. Thus the hypothesis that each of the personality traits from the Big 5+2 model is a statistically significant predictor of the SDO. The concept of SDO is viewed as a global phenomenon in this study, without taking into analysis the 4 dimensions of the SDO.

METHOD

Sample

Participants were mostly from Southern Serbia (N = 283), aged 18-60 years (M = 25.84, SD = 6.58), 79% of whom were females. The research was conducted via social networks during the spring of 2022. Respondents were informed about the research purposes and they filled in questionnaires voluntarily and anonymously. Thus, ethical approval was obtained for this study.

Instruments

Social Dominance Scale or SDO-7 (Ho et al, 2015). The scale consists of 8 items measuring the 4 subdimensions of the SDO on a 7-point Likert scale: Pro-trait Dominance, Con-trait Dominance, Pro-trait Anti-egalitarianism, and Con-trait Anti-egalitarianism. In this study, SDO is measured as a one-dimensional variable, showing the internal reliability of α = .813.

Inventory of Attitudes Toward Seeking Mental Health Services or IASMHS (Mackenzie, Knox, Gekoski, & Macaulay, 2004). This is the scale consisting of 24 items measuring Psychological Openness, Help-seeking Propensity, and Indifference to Stigma on a 5-point Likert scale. Internal reliability of the subscales on an examined sample was as follows - Psychological Openness α = .709, Help-seeking Propensity α = .790 and, Indifference to Stigma α= .718

Big Five plus two questionnaire short version (Čolović et al., 2014). The scale was constructed on the basis of lexical descriptions of personality in the Serbian language. The second psycho-lexical study in the Serbian language, from which the questionnaire was derived, was conducted using Telegen and Waller's non-restrictive methodology for the selection of personality descriptions. The questionnaire is designed to assess seven dimensions of personality - Aggressiveness, Extraversion, Neuroticism, Openness, Conscientiousness, Positive Valence, Negative Valence and contains 70 items measured on a five-point Likert scale. Each of the subscales showed high internal reliability with the following values - Aggressiveness α = .855, Extraversion α = .861, Openness α = .801, Neuroticism α = .906, Conscientiousness α = .877, Positive Valence α = .879, Negative Valence α = .80

RESULTS

For all the variables used in this research, min, max, average values, standard deviations, skewness, kurtosis and significance of K-S test are shown in Table 1.

Table 1. Descriptive values of examined variables

	Min	*Max*	*AS*	*SD*	*Sk*	*Ku*	*K-S*
Social Dominance	1	6.13	2.537	1.087	.777	.441	.051
Aggressiveness	1	5	2.615	.835	.367	-.278	.251
Extraversion	1.60	5	3.664	.742	-.375	-.259	.230
Neuroticism	1	5	2.634	.951	.314	-.479	.298
Openness	2.40	5	4.140	.603	-.669	-.143	.004
Conscientiousness	1.40	5	3.504	.837	-.179	-.696	.307
Positive valence	1.10	5	3.089	.822	.021	-.517	.381
Negative valence	1	4	1.708	.581	1.142	1.220	.00
Psychological Openness	.88	4	2.842	.707	-.443	-.270	.049
Help-seeking Propensity	.38	4	3.179	.684	-1.305	1.861	.00
Indifference to Stigma	.63	4	3.268	.632	-1.166	1.435	.00

Note: K - S - significance of the Kolmogorov - Smirnov test

Data from Table 1 showed that eight measures were within the range of normal distribution (skewness and kurtosis +/- 1), while the results of the Kolmogorov - Smirnov test of normality of distribution showed that five out of eleven investigated variables were

normally distributed. Taking this information into account, parametric techniques were used in further analysis.

Table 2. Intercorrelations between Social Dominance and Personality traits and Attitudes toward seeking mental health services

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. SDO	-										
2. A	.195**	-									
3. E	-.103	-.171**	-								
4. N	.008	.337**	-.430**	-							
5. O	-.194**	.021	.385**	-.164**	-						
6. C	-.052	-.114	.299**	-.451**	.157**	-					
7. PV	.223**	.328**	.338**	-.174**	.350**	.197**	-				
8. NV	.248**	.534**	-.126*	.313**	-.153**	-.283**	.284**	-			
9. PO	-.332**	-.178**	-.012	-.134*	.163**	.023	-.216**	-.238**	-		
10. HP	-.273**	-.224**	.162**	-130*	.170**	.191**	-.065	-.272**	.382**	-	
11. IS	-.084	-.109	.082	-.306**	.134*	.123*	.007	-.219**	.441**	.234**	-

Note: SDO – Social Dominance; A – Aggressiveness; E – Extraversion; N – Neuroticism; O – Openness; C - Conscientiousness; PV – Positive Valence; NV – Negative Valence; PO – Psychological Openness; HP – Help-seeking Propensity; IS – Indifference to Stigma; **p<.01;*p<.05

The results in Table 2. showed statistically significant positive and low correlation of SDO with Aggressiveness and Positive and Negative Valence, and negative low correlation with Openness. Intercorrelations analysis further showed no correlation between SDO with Indifference to stigma. A very low, yet significant, correlation between all three variables representing attitudes with personality traits was also found in the given sample.

Table 3. Personality traits and Attitudes toward seeking mental health services as predictors of Social Dominance

Block	Predictors	ß	*P*	Sum of model
1	Aggressiveness	.062	.386	R= .404 R²= .163 F= 7.684 *p*= .00
	Extraversion	-.113	.098	
	Neuroticism	-.104	.139	
	Openness	**-.249**	**.000**	
	Conscientiousness	-.048	.456	
	Positive valence	**.292**	**.000**	
	Negative valence	.098	.173	
	Aggressiveness	.040	.567	

2	Extraversion	-.120	.072	
	Neuroticism	-.113	.111	
	Openness	**-.180**	**.005**	R= .476 R^2= .226 F= 7.451 *p*= .00
	Conscientiousness	-.038	.546	
	Positive valence	**.223**	**.002**	
	Negative valence	.074	.296	
	Psychological Openness	**-.231**	**.001**	
	Help-seeking Propensity	-.115	.060	
	Indifference to Stigma	.068	.280	

The results given in Table 3 showed that Block 1, which consists of personality traits, was statistically significant, and explained 16.3% of the total variance ($R^2 = .163$, $F(7, 276) = 7.684$, $p < .00$). Statistically significant predictors of Social Dominance Orientation seen in this Block were Positive Valence ($\beta = .292$, $p < .001$), and Openness ($\beta = -.249$, $p < .000$). The Second Model which consisted of personality traits, and attitudes toward seeking mental health services was statistically significant as well, and explained 22.6% of the total variance of the dependent variable ($R^2 = .226$, $F(3, 273) = 7.451$, $p < .00$). Openness ($\beta = -.180$, $p < .005$) and Positive Valence ($\beta = .223$, $p < .002$) were, once again, statistically significant predictors of Social Dominance Orientation, as well as Psychological Openness ($\beta = -.231$, $p < .001$).

DISCUSSION

In the present study, Openness and Positive Valence as personality traits proved to be statistically significant predictors of the SDO, as well as Psychological Openness which stood out among the other two attitudes towards seeking mental health services in the given sample. Thus the results of the present study have partially confirmed hypotheses of the Big five plus two personality traits and attitudes towards seeking mental health services being the significant predictors of Social Dominance Orientation.

Individuals low on Openness to new experiences should be more sensitive to threats to social stability and security and consequently become increasingly motivated to seek group-based social cohesion, control, and collective security (Perry & Sibley, 2012). They should also be more likely to value clear and unambiguous moral prescripts and rules describing how the social world should operate. Low Openness level is also seen as a strong predictor of social conformity (Duckitt & Sibley, 2010). Thus it is no surprise that it was able

to predict higher tendencies for favouring hierarchy-enhancing ideologies and policies, as well as higher levels of a person's acceptance or rejection of numerous ideologies and policies relevant to group relations, which SDO represents as described by Pratto, et al. (1994). Openness to experience is a well-studied trait in the literature on personality and political behaviour (Gøtzsche-Astrup & Oluf, 2019), and other studies confirm correlation of low levels of Openness to experience with SDO (Lee, Ashton, Ogunfowora, Bourdage, Shin, 2010; Duckitt & Sibley, 2010; Nicol, & De France, 2016)

Structure of the dimension Positive Valence in the short version of the Big 5+2 scale to a greater extent impresses narcissistic tendencies of an individual, while positive self-image is in the second plan (Čolović, et al. 2014). As we used the short scale version on the given sample, this variable is more of a description of narcissistic tendencies rather than a good self-image. Being self-focused, narcissists care less about others, and out-groups exemplify ‘‘others”. Narcissists are therefore expected to express disapproval and negativity toward out-groups (by definition different to the self). Although self-esteem, a healthier cousin of narcissism, does not consistently predict intergroup bias (Rubin & Hewstone, 1998), narcissism might. After all, SDO correlates with narcissism (Carnahan & McFarland, 2007), and narcissists are problematically self-focused and relatively higher in ‘‘meaner” Dark Triad variables. Thus we could partially and with caution claim that those high narcissistic tendencies do predict high levels of SDO in the present study.

Psychological Openness was shown as a significant predictor of SDO on the given sample. Individuals who are less open to acknowledging psychological problems and less open to the possibility of seeking professional help for themselves have a tendency to be more oriented to social dominance - to desire more that one's in-group dominates and is superior to out-groups. Since there were no concrete studies on correlation of SDO with Attitudes towards seeking mental health services using the IASMHS instrument, we might explain given results by saying that individuals with higher levels of SDO are less open, or even in denial of the psychological problems they are having. That might put them in a position where they are part of an “inferior” group rather than a superior group, since the psychological problems they are having could make them be seen as vulnerable and weak. Being in that state of simultaneously believing that some groups are simply inferior to others, and being more psychologically open might put them in an “inferior” group creating a sort of cognitive dissonance. Thus, with a goal in mind tending to obtain balance, they choose not to talk about their psychological problems.

Munson, Floersch, and Townsend (2009) claimed that there was a pattern that females reported higher scores on Psychological Openness and Help-Seeking Propensity than males. Since the sample used for this study consisted mainly of females (79%) this presented result should be taken with caution, and further investigated in the future studies where the sample would be more representative of the general population. As for the Help-seeking propensity, which was not shown as a significant predictor of SDO in our study, it was mainly researched on the male sample and as a general attitude rather than help-seeking propensity for mental health services, which doesn't give us much space for the generalisation of our given sample (Holt, 2014; Wasylkiw & Clairo, 2016).

Indifference to stigma did not correlate with the SDO, thus it is less likely for it to be a significant predictor of SDO. This result is consistent with other studies confirming the association of SDO with higher levels of gender minority stigma (Puckett, DuBois, McNeill, & Hanson, 2019), stigmatisation of the homeless (Smith & Stathi, 2022), and higher levels of stigmatisation toward a person with schizophrenia belonging to the out-group based on gender (Lampropoulos, Troïan, D'amico, Bentata, & Apostolidis, 2019). As for the Neuroticism showing no effect on the SDO, the given result is in accordance with previous

studies (Ekehammar et al, 2004; Hawley, & Hensley, 2009; Nicol, & De France, 2016). Looking further into the results, Extraversion and Conscientiousness were not in correlation with SDO. In a set of samples, Pratto et al (1994) showed that there was also no evidence that SDO is related to the positively valued personality dimensions (e.g., Extraversion and Calmness) as opposed to the negative dimensions, which is in accordance with the results of our study.

The Big Five plus two instrument contains a subscale of Aggressiveness which is extracted as the factor opposite of Agreeableness (Čolović, et al 2014). The factor of Aggressiveness is in correlation with the SDO, but it was not shown as a significant predictor of it. Number of studies showed the significant negative correlation of Agreeableness with SDO (Ekehammar et al., 2004; Nicol and DeFrance, 2016). Lippa & Arad (1999) showed that individuals high in self-rated SDO were judged to be less agreeable and more prejudiced (among other traits) on the basis of a long personal interview. Agreeableness should predict SDO as the tough-minded, self-centred characteristics of those low in this personality trait should cause them to see the world as a socially competitive Darwinist jungle, in which might is right and winning is everything (Sibley & Duckitt, 2008; per Perry, & Sibley, 2012). Moreover, those low in Agreeableness should tend to value power and be sensitive to situations signalling resource scarcity and competition (Perry, & Sibley, 2012).

Considering this information, further research is desired in order to dive deeper into the relation of SDO with Aggressiveness in the domestic population, as well as other personality traits. Current results could have been disrupted due to a larger number of female participants, than male ones. Thus the recommendation for the future research on better balancing the sample, which could also give the opportunity to look into gender, and age group differences, as well as differences in the sample regarding education levels. Since the SDO, and personality traits instruments do have a great number of subscales, more insight into the relation of these variables could be obtained in the future studies.

Equally important information that could be obtained is the insight into SDO in the context of institutions providing mental health services. Individuals high in SDO tend to support discriminatory ideologies. So could that be generalised to the population working with clients in the field of mental health protection in a domestic sample? Individuals' levels of SDO may influence their contribution to social equality or inequality in the kinds of social roles they take on, that either enhance or attenuate inequality. Pratto et al (1994) predicted that those who are higher on SDO will become members of institutions and choose roles that maintain or increase social inequality, whereas those who are lower on SDO will belong to institutions and choose roles that reduce inequality. By performing organisational roles, individuals greatly expand their capacity for group discrimination because collective institutions can often allocate resources or costs on a far larger scale than individuals can. But the individual also tends to adapt his SDO levels to the institution’s norms, so it would be optimal working on having people with low SDO employed in such roles which lower the group inequality in our centres of mental health protection.

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SOCIAL PSYCHOLOGY

UDC: 159.942:159.947.5

SUBJECTIVE SOCIAL STATUS, SELF-PERCEIVED HEALTH AND LIFE SATISFACTION – THE MEDIATING EFFECT OF NEGATIVE EMOTIONS

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Abstract. Social status and health are closely connected. People with higher social status have better physical and mental health than people with lower social status. Negative emotions are considered a key component that mediates the relationship between social status and health. The current paper aims to analyse the potential mediating effect of sadness, anxiety, envy, and anger in the relationship between subjective social status, health and well-being in two studies from Bulgaria – the country with the highest economic inequalities in the European Union. For the first study, data from the European Social Survey (ESS), round 6, is used to analyse the potential mediating effect of sadness and anxiety. The dataset consists of 2260 participants (M = 54, SD = 17). The relevant items from the larger ESS questionnaire are used. Another independent dataset is gathered to explore the potential mediating effect of envy and anger. The second study consists of 892 participants (M = 35, SD = 14). Bulgarian adaptations of the following instruments are used: MacArthur's Subjective Social Status Scale, Benign and Malicious Envy Scale (BeMaS), subscale Anger of Buss-Perry Aggression Questionnaire, an item for self-perceived health, and Satisfaction with Life Scale (SWLS). Results show that the relationship between subjective social status and health is partially mediated by sadness, anxiety, and anger. These results indicate that discrete negative emotions have different mediating effects on the relationship between subjective social status and health.

Keywords: subjective social status; negative emotions; self-perceived health; life satisfaction

INTRODUCTION

Social inequalities are a universal phenomenon of human societies. They can be found in all stages of economic development – from the nomadic groups of hunter-gatherers to the sedentary, post-industrial societies of the West (Smith et al., 2010). Historical data shows that social inequalities generally tend to follow a growing trend except during times of economic turmoil (Alfani, 2021). The data for the past century confirms this. The social inequalities in USA and Europe were on the rise except during and after the Great Depression, and the two World Wars (Piketty, 2014). Data for 2021 shows that global wealth is still very unequally distributed. The lower 53% of the global population owns 1,1% of global wealth, while the upper 1,2% of the global population owns about 48% of global wealth (Global Wealth Report, 2022). Bulgaria is the country with the largest economic inequalities in the European Union. The data for 2019 shows that the fifth quintile earns almost half of all the income in the country. The Gini coefficient for Bulgaria is 40,8%, with an average value of 30,2% for the EU (Eurostat, 2021).

The research on social inequalities is necessitated, among other things, by the close connection between the position in the social hierarchy, or social status, and health. People with lower social status have higher morbidity and mortality rates. They are more likely to

suffer from cancer, cardiovascular diseases, arthritis, diabetes, asthma, dementia, Alzheimer's disease, sexually transmitted diseases, accidental traumas, and others. They are also at a higher risk of developing mental health disorders. People with lower social status are more likely to smoke, take drugs and use excessive amounts of alcohol, and are less likely to engage in healthy lifestyle behaviours like healthy eating, regular exercise, taking vitamins, food supplements, and medicine, and using contraception (for a detailed overview, see Ellis, Hoskin & Ratnasingam, 2018).

Social status is also linked to subjective health indicators like self-perceived health and life satisfaction. An overview of 107 studies conducted worldwide, operationalizing social status as income, education, or profession, finds only two studies that do not show a statistically significant correlation between self-perceived health and social status (Ellis, Hoskin & Ratnasingam, 2018). The relationship between social status and life satisfaction is more ambiguous. When social status is measured as years of education – 43 of 77 studies find statistically significant results, and when social status is operationalized as monthly income – 56 of 80 studies find significant correlations (*ibid*). Although subjective in nature, self-perceived health and life satisfaction are reliable physical health indicators (McDowell, 2006). Meta-analysis of 27 studies shows that in 23 of them the perception of one's health is a reliable predictor of mortality, and in some cases even has higher predictive utility than the objective health indicators (Idler & Benyamini, 1997).

The negative health outcomes of social status are not observable only among people with low social status. There isn't an absolute threshold of income, above which the negative health effects of social status stop manifesting. The Whitehall studies show that there is a social gradient in health in which each position in the social hierarchy has better health than the ones beneath it and worse health than the ones above it. These status differences in health persist even after controlling for age, height, smoking, systolic blood pressure, plasma cholesterol concentration, and blood sugar (Marmot, 2004). But these health inequalities cannot be fully explained by the objective indicators of social status – income, education, and profession. Wilkinson and Pickett's (2009) research shows that national income per person and life expectancy are strongly correlated only in countries in the early stages of economic development. After reaching about USD 10,000 national income per person the increase in life expectancy is only marginal and after USD 25,000 the correlation disappears. But a strong correlation between social inequality in society and health persists. This shows a strong psychological component exists in the relationship between social status and health. The effects of social status on health are mediated by individual perceptions and subjective interpretations of one's position in the social hierarchy.

Subjective Social Status

To account for this psychological component of social status, the current studies use subjective social status as a measurement of one's perception of the position in the social hierarchy. Subjective social status (SSS) is a reliable measurement, tested in large representative, multi-ethnic samples, and has good test-retest reliability (Adler, Epel, Castellazzo, & Ickovics 2000; Operario, Adler & Williams, 2004; Ostrove, Adler, Kuppermann, & Washington, 2000). SSS has weak to moderate correlation with the objective status indicators (Adler et al., 2000; Goyder, 1975). According to a paper, published by Singh-Manoux, Adler & Marmot (2003), 48% of the variation in SSS can be explained by five factors – household income, education, profession, satisfaction with living standard, and feelings of financial security. These results show that SSS is based on objective status indicators, but also incorporates cognitive appraisal and "averaging" of this information.

Subjective social status is closely linked to several health variables. Research shows that SSS is positively correlated to feelings of control over one's life and active coping, and negatively correlated to sleep latency, waist-to-hip ratio, resting heart rate, chronic stress, perceived stress, pessimism, and passive coping (Adler et al., 2000). SSS is a statistically significant predictor of several diseases and health conditions, like angina, diabetes, respiratory illness, coronary artery disease, hypertension, dyslipidemia, and depression (Singh-Manoux et al., 2003; Tang et al., 2016). SSS is also linked to the subjective health indicators self-perceived health and life satisfaction (Adler et al., 2000; Operario et al., 2004; Singh-Manoux et al., 2003).

Negative Emotions

One of the factors that are proposed to have a key mediating role in the relationship between SSS and health are negative emotions (Gallo & Matthews, 2003). Emotions are accompanied not only by behavioural changes but also by physiological changes in the nervous, cardiovascular, respiratory, endocrine, motor, and immune systems (Kiecolt-Glaser et al., 2002; Uskul & Horn, 2015). Trait negative affect is linked to changes in health behaviours. People high on trait negative affects tend to have higher rates of alcohol consumption, smoking, and drug use, higher carbohydrate and fat intake, and are less willing to exercise (Consedine & Moscowitz, 2007). Trait negative affect is also linked to diseases such as cardiovascular disease, cancer, arthritis, common cold, and diabetes, even after controlling for the role of health behaviours (*ibid*). A cross-cultural study with more than 150,000 participants from 142 countries finds that there is weak to moderate correlation between negative affect and self-perceived health (Pressman, Gallagher & Lopez, 2013). Negative affect is also an established mediator in the relationship between SSS, morbidity, mortality, and self-perceived health (Adler et al., 2000; Kraus et al., 2013; O'Leary et al., 2021).

Although there is an established link between trait negative affect and health, some researchers propose that the role of discrete negative emotions should be studied, since each separate emotion is accompanied by its own set of behavioural and cognitive-affective states and could have specific effects on health (see Consedine & Moscowitz, 2007; Uskul & Horn, 2015).

Sadness is a normative negative emotion, a temporary state of mind, that people experience throughout their lifespan. It occurs after the irrevocable loss of something we value (Lazarus, 1991). This loss could be real like the death of a loved one or more abstract like the loss of one's own beliefs. Sadness is characterised by low engagement, acquiescence with life's circumstances, and resignation from the situation at hand. It doesn't motivate behaviour, but rather inclines the Self towards introspection and acceptance (Lazarus, 1991). Sadness can more than double the risk of myocardial ischemia during daily activities in patients with coronary artery disease, even after controlling for the effects of physical activity (Gullette et al., 1997). The experimental induction of sadness in laboratory settings shows that sadness is linked to stress via the activation of the autonomous nervous system and the HPA axis (Brown et al., 1993; Ottowitz et al., 2004). Sadness is also linked to health behaviours, like increased consumption of foods high in fats and sugars, increased smoking, alcohol and drug abuse (Dorison et al., 2020; Peltzer, 2009; van Strien et al., 2013).

Anxiety is a reaction to a perceived existential threat. Usually, the threat is more symbolic than real, but what intimidates the Self is the belief in its inevitability. In contrast with sadness, which inhibits behaviour, the action tendency of anxiety is aimed at avoiding the threat. But because the threat often isn't concrete and tangible, anxiety is characterised by

diffused tension caused by the willingness to act without proper direction for this action (Lazarus, 1991). Research shows that anxiety is weakly associated with the development of angina and strongly associated with the development of fatal and nonfatal myocardial infarction (Kubzansky et al., 2006). Anxiety is associated with an eagerness to regulate the anxious experiences and relieve stress which often leads to the development of unhealthy behaviours. There is an association between anxiety, smoking, alcohol consumption, overeating, and risky sexual behaviours (Consedine & Moscowitz, 2007).

Envy is defined as "an unpleasant and often painful blend of feelings characterised by inferiority, hostility, and resentment caused by a comparison with a person or group of persons who possess something we desire" (Smith & Kim, 2007, p. 49). The empirical literature is lacking evidence for the direct effect of envy on health, but there seems to be some indirect pathways through which envy could affect health. On one hand, envy is closely associated with hostility and anger which could lead to CVD (cardiovascular disease) and other deteriorating health effects, and on the other hand, envy is linked to worse social support which is a reliable protective factor for good health (Smith, Combs & Thielke, 2008). Economic research also shows that lower income households in areas with large income disparities have higher conspicuous consumption, lower health expenditure, and younger age at death (Japaridze & Sayour, 2021). The current studies conceptualise envy as consisting of two components – benign and malicious envy (van de Ven & Zeelenberg, 2019). Benign envy motivates the individual to reach his goals by improving himself, while malicious envy is aimed at bringing down the person who is envied.

In the terms of Richard Lazarus (1991) anger is caused by a "demeaning offense against me and mine" which threatens ego-identity. This offense is accompanied by blame towards the offender and willingness to attack the one responsible for the slight. Although, this innate willingness to attack is often inhibited by self-interest, social and ethical norms. Anger is probably the most extensively researched negative emotion in the context of health. Anger is associated with CVD, diabetes, somatic complaints, chronic pain, physician visits, immune functioning, and mortality. Anger is also linked to a lack of physical activity, and increased consumption of alcohol, cigarettes, and caffeine (Consedine & Moscowitz, 2007; Staicu & Cutov, 2010).

Despite the key role researchers attribute to negative emotions as mediators of the relationship between social status and health, there is a scarcity of studies that explore this connection. Two meta-analyses, encompassing the period from 1990 to 2008, covering the PsycINFO, MEDLINE, and PsychArticles databases, found only 19 papers that analyse the role of negative emotions as mediators between social status and health (Gallo & Matthews, 2003; Matthews, Gallo & Taylor, 2010). But all the mentioned articles use objective measures of social status. As far as the author is aware, the studies presented in this paper are the first to analyse the mediating role of discrete negative emotions in the relationship between SSS and health.

Study 1

METHOD

Participants and Procedure

The first study uses data from the European Social Survey, round 6. The sample is gathered in 2012 and consists of 54 673 participants from 29 countries. All the data in this

round is gathered via face-to-face interviews. The dataset is freely available on the website of the European Social Survey (https://www.europeansocialsurvey.org/).

The Bulgarian sample consists of 2260 participants gathered via proportionate stratified sampling procedure. The sample consists of 42,4% male and 57,6% female. The average age of the participants is 54 years. Almost half of the research participants have upper secondary education. The average net household income ranges from 501 to 550 leva. The detailed distribution of the socio-demographic variables is presented in Table 1.

Table 1. Detailed Overview of Socio-Demographic Variables in Study 1

Variable	*n*	*%*
Sex		
Male	958	42,4%
Female	302	57,6%
Age		
Up to 35 years	378	16,7%
Between 36 and 50 years	544	24,1%
Above 50 years	1338	59,2%
Education		
No education	55	2,4%
Primary	95	4,2%
Lower Secondary	479	21,2%
Upper Secondary	1126	49,8%
Tertiary	505	22,4%
Net household income		
Up to 650 leva	1206	61,7%
Between 651 and 1000 leva	453	23,1%
Above 1001 leva	297	15,2%

Instruments

Subjective social status. Measured by MacArthur's Subjective Social Status Scale (Adler et al., 2000). Participants are asked: "There are people who tend to be towards the top of our society and people who tend to be towards the bottom. On this card, there is a scale that runs from top to bottom. Where would you place yourself on this scale nowadays?". Participants must answer on a 10-point scale – 1 (Bottom of our society) and 10 (Top of our society).

Self-perceived health. Participants are asked: "How is your health in general? Would you say it is …". The answers are measured on a 5-point Likert scale, ranging from 1 = "very good" to 5 = "very bad". For the current study, answers were reverse coded so that higher values correspond to better health.

Life Satisfaction. Participants are asked: "All things considered, how satisfied are you with your life as a whole nowadays?". A show card with 11 horizontal positions is shown to the participants. The leftmost position is labelled "extremely dissatisfied", and the rightmost position is labelled "extremely satisfied". Research shows that measuring life satisfaction with a single item has similar and, in some cases, even identical psychometric properties to the Satisfaction with Life Scale (Cheung & Lucas, 2014).

Sadness/Anxiety. The item measuring sadness is part of a larger depression questionnaire – Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977).

And the item for anxiety is developed by the ESS-round 6 module creators to be similar to the rest of the items measuring negative feelings. The participants are asked: "Please tell me how much of the time during the past week you felt sad/you felt anxious". The participants must answer on a 4-point scale with 1 = "None or almost none of the time" and 4 = "All or almost all of the time".

RESULTS

To examine the relationship between SSS, self-perceived health, life satisfaction, sadness, and anxiety a bivariate correlations analysis was performed (Table 2). Results show that there is a statistically significant correlation between all included variables. Most of the correlation coefficients are weak to moderate, with only the association between SSS and life satisfaction being above 0.5.

Table 2. Intercorrelation matrix of model variables in Study 1

Variable	1	2	3	4	5
1. Subjective social status	-				
2. Self-perceived health	0,347***	-			
3. Life satisfaction	0,514***	0,372***	-		
4. Sadness	-0,317***	-0,378***	-0,427***	-	
5. Anxiety	-0,222***	-0,408***	-0,289***	0,474***	-

*** $p < .001$.

Two mediation analyses were performed using the PROCESS macro v4.0 for SPSS. The first analyses the effect of SSS on self-perceived health through sadness and anxiety. The second analyses the effect of SSS on life satisfaction through the negative emotions.

Results from the first mediation analysis show that subjective social status has a significant direct and indirect effect on self-perceived health (Figure 1). Results for the total effect show that SSS positively predicts changes in self-perceived health (R^2 = 0,12, b = 0,18, p < 0,001). SSS has a significant negative effect on both mediators – sadness (b = -0,15, p < 0,001) and anxiety (b = -0,08, p < 0,001). And both negative emotions – sadness (b = -0,19, p < 0,001) and anxiety (b = -0,40, p < 0,001) are negative predictors of self-perceived health. A bootstrap confidence interval for the indirect effect based on 5000 bootstrap samples was entirely above zero for both negative emotions – sadness (0,020 – 0,038) and anxiety (0,024 – 0,042). Results from the mediation analysis show that both negative emotions are partial mediators of the relationship and SSS retains its direct effect on self-perceived health (b = 0,12 p < 0,001).

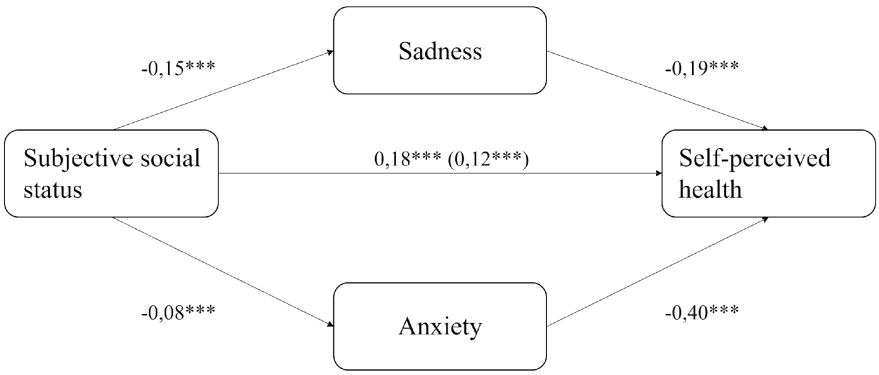


Figure 1. Mediation model – SSS on self-perceived health via sadness/anxiety

Results for the second mediation analysis show that there is a significant direct and indirect effect on life satisfaction (Figure 2). Results show that SSS positively predicts life satisfaction (R^2 = 0,27, b = 0,72, p < 0,001). Both negative emotions – sadness (b = -0,77, p < 0,001) and anxiety (b = -0,32, p < 0,001) are negative predictors of life satisfaction. A bootstrap confidence interval for the indirect effect based on 5000 bootstrap samples was entirely above zero for both negative emotions – sadness (0,093 – 0,14) and anxiety (0,014 – 0,040). Results from the mediation analysis show that both negative emotions are partial mediators of the relationship and SSS retains its direct effect on life satisfaction (b = 0,57, p < 0,001).

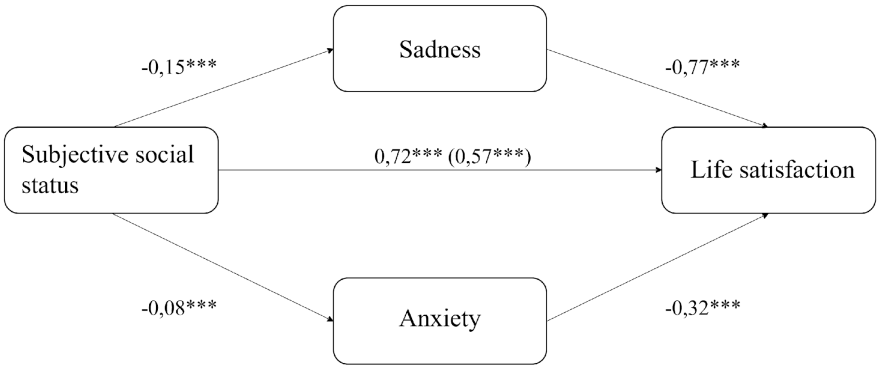


Figure 2. Mediation model – SSS on life satisfaction via sadness/anxiety

DISCUSSION

The bivariate correlations analysis shows that there is a statistically significant relationship between all included variables and these relationships are in the expected direction. SSS, self-perceived health, and life satisfaction are positively associated, meaning that an increase in SSS is linked to an increase in self-perceived health and life satisfaction. SSS is also negatively associated with both negative emotions. In turn, the more frequent occurrence of negative emotions is associated with worse self-perceived health and lower life satisfaction.

Both mediation analyses show that sadness and anxiety are statistically significant partial mediators in the relationship between SSS and self-perceived health and SSS and life satisfaction. The decrease in SSS leads to an increase in feelings of sadness and anxiety which in turn leads to worsened health and life satisfaction. People with low SSS tend to perceive their surroundings as more stressful and they see themselves as less capable of affecting their environment (Adler et al., 2000). This lack of agency combined with the constant stress of dealing with everyday challenges could be responsible for the increase in negative emotions.

A stronger relationship between SSS and life satisfaction is observed in both the correlation and mediation analyses. And although sadness and anxiety have a significant partial mediating role in the relationship between SSS and health, the majority of the observed effect is due to the direct effect of SSS.

Study 2

METHOD

Participants and Procedure

The sample of Study 2 consists of 892 individuals from Bulgaria. The sample is gathered via convenience sampling - word-of-mouth and social media (Facebook and Reddit). The sample consists of 39% men. The participants are aged 15 to 76 years, with a mean age of 35 years. Most participants are highly educated with more than 70% of them having tertiary education. More than half of the sample earns between 711 and 2500 leva per month. The detailed distribution of the socio-demographic variables of the sample is presented in Table 3.

Table 3. Detailed Overview of Socio-Demographic Variables in Study 2

Variable	*n*	*%*
Sex		
Male	344	38,6%
Female	548	61,4%
Age		
Up to 35 years	575	64,6%
Between 36 and 50 years	179	20,1%
Above 50 years	136	15,2%
Education		
Lower Secondary	30	3,4%
Upper Secondary	219	24,6%
Bachelor	245	27,5%
Master	360	40,4%
Doctor	38	4,3%
Income		
Up to 710 leva	167	18,7%
Between 711 and 1500 leva	304	34,1%
Between 1501 and 2500 leva	235	26,3%
Between 2501 and 3500 leva	105	11,8%
Above 3500 leva	81	9,1%

Instruments

The second study analyses the mediating role of anger, benign and malicious envy. Descriptive statistics for all the variables in the mediation model are presented in Table 4. The Bulgarian adaptations of the following psychometric instruments are used:

Subjective social status. Measured by MacArthur's Subjective Social Status Scale (Adler et al., 2000) as in the previous study.

Envy. Measured by the Benign and Malicious Envy Scale (Lange & Crusius, 2015). This instrument conceptualises envy as consisting of two independent dimensions – benign and malicious envy. The scale consists of 10 items – 5 for benign envy (e.g. "Envying others motivates me to accomplish my goals") and 5 for malicious envy (e.g. "I feel ill will toward people I envy"). The concept is measured on a 6-point Likert scale with 1 (strongly disagree)

and 6 (strongly agree). The two subscales demonstrate good internal consistency in the Bulgarian sample – benign envy (α = 0.83) and malicious envy (α = 0.84).

Anger. Measured by subscale "Anger" from the Buss-Perry's Aggression Questionnaire (Buss & Perry, 1992). The Bulgarian adaptation of the subscale consists of 10 items (α = 0.77) measured on a 5-point Likert scale with 1 (strongly disagree) and 5 (strongly agree) (Kalchev, 2009).

Self-perceived health. Measured by the same item as in Study 1.

Life satisfaction. Measured by the Satisfaction with Life Scale (Diener et al., 1985). The scale consists of 5 items (α = 0.87) and is measured on a 7-point Likert scale with 1 (strongly disagree) and 7 (strongly agree).

Table 4. Descriptive statistics for all variables included in the mediation model of Study 2

Variables	*M*	*SD*	Min	Max	Skewness	Kurtosis
Subjective social status	5,75	1,61	1	10	-0,079	0,103
Self-perceived health	3,88	0,83	1	5	-0,375	-0,263
Life satisfaction	23,62	6,64	5	35	-0,590	-0,064
Anger	24,83	8,7	10	49	0,504	-0,443
Benign envy	19	6,1	5	30	-0,3	-0,521
Malicious envy	7,9	4,2	5	30	2,21	6,02

RESULTS

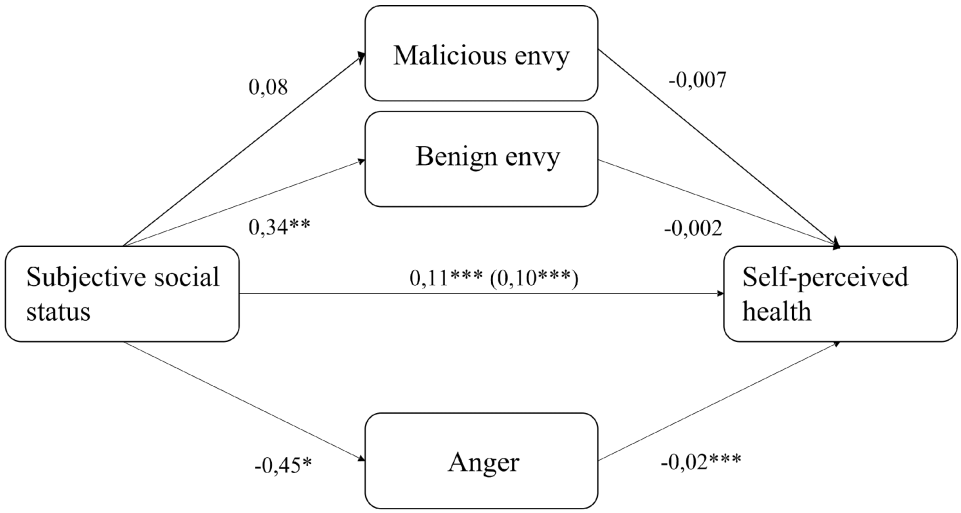
To explore the relationship between SSS, self-perceived health, life satisfaction, anger, and envy, a bivariate correlation analysis was performed (Table 5). Results show that SSS is positively correlated with both health indicators - self-perceived health and life satisfaction. With the correlation between SSS and life satisfaction being higher. SSS also correlates positively to benign envy and negatively to anger and has no statistically significant relationship with malicious envy. Anger is also correlated to both health indicators and the two types of envy, having a much stronger association to malicious envy. Benign envy does not have a statistically significant association with the health indicators, while malicious envy is negatively linked to them.

Table 5. Intercorrelation matrix of model variables in Study 2

Variable	1	2	3	4	5	6
1. Subjective social status	-					
2. Self-perceived health	0,212***	-				
3. Life satisfaction	0,378***	0,376***	-			
4. Anger	-0,085*	-0,203***	-0,144***	-		
5. Benign envy	0,089**	-0,016	-0,016	0,072*	-	
6. Malicious envy	0,03	-0,071*	-0,112**	0,227***	0,178***	-

*** $p < .001$. ** $p < .01$. * $p < .05$

Two mediation analysis were performed using the PROCESS macro v4.0 for SPSS. Results for the first mediation model show that SSS positively predicts changes in self-perceived health (R^2 = 0,05, b = 0,11, p < 0,001) (Figure 3). SSS positively predicts benign envy (b = 0,34, p < 0,01), but the relationship between benign envy and health is not statistically significant (b = -0,002, p = 0,64). SSS doesn't have statistically significant effect on malicious envy (b = 0,08, p = 0,37) and malicious envy doesn't have significant relationship with self-perceived health (b = -0,007, p = 0,31). The pathway through anger is statistically significant – SSS negatively predicts anger (b = -0,45, p < 0,05), which in turn negatively predicts self-perceived health (b = -0,02, p < 0,001). Results from the bootstrapping method, based on 5000 bootstrap samples, confirm the significant indirect effect of anger (0,0015 – 0,015) and the lack of indirect effect through both types of envy – benign (-0,0045 – 0,0027) and malicious (-0,0036 – 0,001). SSS retains its direct effect on life satisfaction (b = 0,57, p < 0,001).

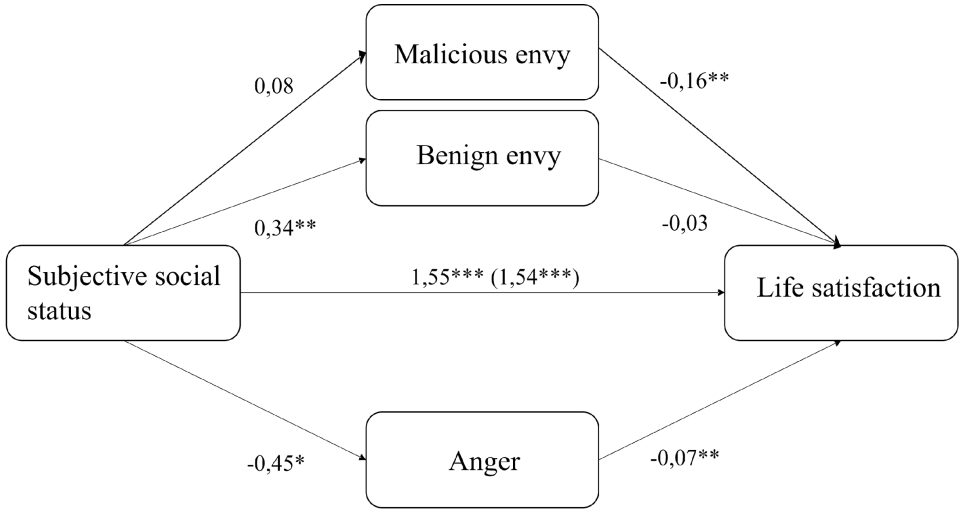


*** p < 0,001; ** p < 0,01; * p < 0,05

Figure 3. Mediation model – SSS on Self-perceived health via Envy/Anger

Results for the second mediation model show that SSS positively predicts changes in life satisfaction (R^2 = 0,14, b = 1,55, p < 0,001) (Figure 4). SSS positively predicts benign envy (b = 0,34, p < 0,01), but the relationship between benign envy and life satisfaction is not statistically significant (b = -0,03, p = 0,41). SSS doesn't have a statistically significant effect on malicious envy (b = 0,08, p = 0,37), but malicious envy is a significant, negative predictor of life satisfaction (b = -0,16, p < 0,01). SSS also negatively predicts anger (b = -0,45, p < 0,05), which in turn negatively predicts life satisfaction (b = -0,07, p < 0,01). Results from the bootstrapping method, based on 5000 bootstrap samples, confirm the significant indirect effect of anger (0,003 – 0,07), but doesn't confirm the significant indirect effect of malicious

(-0,05 – 0,02) and benign (-0,04 – 0,02) envy. Subjective social status retains its direct effect on life satisfaction (b = 1,54, $p < 0,001$).



*** p < 0,001; ** p < 0,01; * p < 0,05

Figure 4. Mediation model – SSS on Life satisfaction via Envy/Anger

DISCUSSION

The second study provides support for the partial mediating role of anger. Data shows that anger is negatively associated with SSS, health, and life satisfaction. Lower SSS is associated with decrease in health and well-being and part of this relationship is explained through the mediating role of anger. People with low social status tend to have more negative experiences in their everyday life, because of the limitations imposed by their objective and subjective circumstances. The integral role of anger in the relationship between social status, health, and life satisfaction is also supported by other research. Hostility and anger seem to be more prevalent in lower social strata (Ellis, Hoskin & Ratnasingam, 2018). And in turn, anger and general hostility are reliable predictors of health and life satisfaction (Hong & Giannakopoulos, 1994; Staicu & Cutov, 2010).

The results for envy are more ambiguous and inconclusive. The conceptualization of benign and malicious envy allows us to analyse the separate pathways through which these independent, yet correlated constructs intertwine with social status, health, and well-being. Malicious envy negatively predicts life satisfaction but doesn't seem to be predictive of self-perceived health and it doesn't have a statistically significant relationship with SSS. The malicious envy subscale is strongly positively skewed which shows that most participants are reporting low levels of malicious envy. This could be explained by social desirability bias. Eastern Europe is more religious on average than the rest of the continent. About 77% of Bulgarians believe in God and about 20% consider religion to be an important part of their lives (Pew Research Center, 2018). And since envy, in its malicious form, is considered a

deadly sin in Christianity and is forbidden by the Ten Commandments, it's likely that a lot of people would be willing to underreport their experiences of malicious envy. On the other hand, benign envy doesn't seem to be connected to health or well-being but is predicted by SSS. This connection between social status and benign envy could be due to a new conceptualization of envy that emerges after the Industrial Revolution. From an unwanted emotion, envy becomes a desirable driving, motivational force towards progress (Quintanilla & de Lopez, 2013). This conceptualization of envy is encompassed by the benign envy subscale. People with higher self-perceived status tend to experience more benign envy due to the close connection between social status and success, driven by personal ambition, individualism, and willingness to improve oneself.

GENERAL DISCUSSION

The results from the two studies seem to support the main goal of this paper, which is examining the mediating role of discrete negative emotions in the relationship between subjective social status, self-perceived health and life satisfaction. Results from the current studies show that sadness, anxiety, and anger have a statistically significant partial mediating role in the relationship between SSS and health, while both types of envy don't.

Results show that increases in SSS are tied to fewer negative emotions. When people view themselves as being high in the social hierarchy, they tend to experience negative emotions less often. This is in line with previous research which shows that high SSS is linked to less negative affect, less pessimistic, and more optimistic views. SSS also is positively linked to active coping and feelings of control which are predictive of health maintenance (Adler et al., 2000; Cundiff et al., 2013). The decrease in negative emotions combined with the increased agency afforded by SSS lead to better health and well-being.

The research design doesn't allow for a complete comparison between all negative emotions, but there are common trends that emerge in both studies. Although sadness, anxiety, and anger partially mediate the relationship between SSS, health, and life satisfaction, the indirect effect seems to be only marginal compared to the direct effect of SSS. This is especially evident in the second study where almost all of the effect is due to the direct effect of SSS. Another commonality of both studies is that SSS has a stronger association with life satisfaction than with self-perceived health. This can be explained by the common underlying determinants of SSS and life satisfaction. Cross-cultural research shows that feelings of control over life and GDP are the only determinants of life satisfaction across 82 countries (Minkov, 2009). And SSS is determined mainly by household income, education, profession, satisfaction with living standard, and feelings of financial security – all variables closely associated with control over one's own life, financial capabilities and freedoms (Sen, 1995; Singh-Manoux et al., 2003). And despite being subjective in nature, self-perceived health seems to be more closely connected to objective indicators of social status in Bulgaria, rather than to SSS (Hristov, 2022a).

The current research is limited by its design, which doesn't allow for a direct comparison between all negative emotions. Also, the first study is constrained by its reliance on single-item measures. While the second study is limited by its smaller sample and non-probability sampling which slightly decreases the statistical power and generalisation of results.

A future consideration is the inclusion of a social desirability scale. The strong positive skewness of the malicious envy subscale shows that participants are likely to overreport low levels of malicious envy. Results from an unpublished paper which compares the malicious envy subscale of BeMaS and envy subscale of Narcissistic personality traits

questionnaire (Shamshikova & Klepikova, 2012) in Bulgaria shows that the latter subscale is close to the normal distribution and is a statistically significant partial mediator in the relationship between SSS, self-perceived health and life satisfaction (Hristov, 2022b). The more defensive and socially desirable answering could be due to the more explicit and "aggressive" wording of the BeMaS subscale items (e.g. I wish that superior people lose their advantage; Seeing other people's achievements makes me resent them) compared to the Narcissistic personality traits subscale items (e.g. I think there are people who envy everybody; I think that people who doesn't deserve it are often praised).

Acknowledgments. The research is supported by a research grant from Sofia University "St. Kliment Ohridski" and Nippon Foundation (2021 - 2022).

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PSYCHOTHERAPY
& MENTAL HEALTH

UDC: 159.944.4:615.851

EFFECTIVENESS OF COGNITIVE BEHAVIOURAL THERAPY ON STRESS OF WOMEN FACING INFERTILITY: A META-ANALYSIS

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Abstract. Background**:** Infertility is regarded as a highly stressful life experience and the available treatment strategies also add extra distress to the clients, especially women. Cognitive behavioural therapy is one of the psychosocial interventions that have been considered a strategy to alleviate the psychological distress related to infertility. The objective of the present meta-analytic study is to evaluate the research articles published on the effectiveness of cognitive behavioural therapy in managing stress among women facing infertility. Method: A comprehensive data search was done using EBSCO, SCOPUS, PubMed, Google Scholar, and Proquest. Seven articles analysing the effectiveness of psychological interventions in infertility stress, published in the past 20 years (between 2002 and 2022) were included in the meta-analysis. Result**:** *Combined effect size of CBT is found to be high in reducing stress (Hedges' g = 1.279) among women facing infertility. Subgroup analysis indicated that face-to-face cognitive behavioural therapy (Hedges' g = 1.788) is found to be more effective in reducing the psychological stress associated with infertility compared to internet-based CBT* (*Hedges' g* = .644). Subgroup analysis also showed that interventions with long duration (more than 10 weeks, *Hedges' g* = 1.897) are found to be more effective than moderate duration interventions (between 5 and 10 weeks, *Hedges' g* = 1.053) and short duration interventions (less than 5 weeks, *Hedges' g* = 0.139). Conclusion: Cognitive Behavioural Therapy is found to be effective in reducing stress among women facing infertility.

Keywords: cognitive behavioural therapy, stress, infertile women

INTRODUCTION

Failure to conceive a child following at least a year of regular unprotected sexual activity or therapeutic donor insemination is referred to as infertility (American Society for Reproductive Medicine, 2013). It is a diagnosable and treatable reproductive system disorder that is seen worldwide and prevalence studies indicate that 48 million couples and 186 million people worldwide struggle with infertility (Mascarenhas et al., 2012). It is regarded as one of the most painful experiences a couple can have and can harm their physical, mental, social, and financial well-being (Whiteford & Gonzalez, 1995; Sherrod, 2004).

Since parenthood is seen as a major life achievement, problems in giving birth to a child may cause mental distress (Erikson, 1950). The pressure from society to get pregnant may send couples on an emotional roller coaster, as the family and society place high importance on children. Increased anxiety, rage, sadness, feelings of worthlessness or hopelessness, as well as marital issues and irregularities in sexual function, may result from this (Hasanpoor-Azghdy et al., 2014; Anderson et al., 2003; Menning, 1980). Medical advancements have helped some couples to have children, but it can also lead to physical, emotional, and financial hardship for them. Regardless of the cause of infertility (male factor,

female factor, or unclear factors), women are more likely to face the ill effects of infertility. Studies show that participants' spouses' persistent desire to have children and psychosocial difficulties affected women substantially more than men (Schaller et al., 2016; Alosaimi et al., 2017). This clearly depicts the fact that infertility can lead to psychological distress.

At the same time, psychological distress can affect fertility too. Stress and worry cause the hypothalamic-adrenal axis (HPA) to become active, and this activation can affect the hormones that regulate fertility. Increased catecholamines may disturb the uterus and uterine tube function, can cause disruption of immunological processes, and suppression of gonadotropin production. These are only a few of the mechanisms through which psychological stress affects fertility. Most couples find it difficult to deal with the diagnosis of infertility since many of them lack the information and skills necessary to handle the circumstance (Peterson et al., 2007; Schmidt, 2006). Therefore, all clinics should place a high focus on psychoeducational programmes that can address the psychological problems of women.

Cognitive behavioural therapy (CBT) is regarded as a very effective intervention, which enables them to achieve general mental health by identifying and confronting their illogical behaviours and thoughts (Williams, 2011). Changing one's habitual negative thinking patterns might affect their emotions and behavioural patterns, which may improve their ability to manage stress. Additionally, CBT treatment helps patients develop the skills necessary for behaviour change, relationship building, problem-solving, modifying harmful beliefs and attitudes, and cognitive reconstruction (Beck, 2008). The literature review shows that the impact of cognitive behavioural therapy on the stress experienced by women dealing with infertility has not yet been adequately investigated through a meta-analytic method. Meta-analytic studies analysing the effect of CBT on anxiety and depression among infertile women has been done in different studies in recent years (Abdolahi et al., 2019; Golshani et al.,2020). But the impact of CBT on the stress of infertile couples was examined in only one meta-analytic study recently. (Abdollahpour et al., 2021), and they included only three studies. They concluded that effectiveness of CBT in lowering stress cannot be established with these three studies. A thorough literature review indicates that more studies are published in this area and review studies have not included their findings. (Faramarzi et al., 2013; Karaca, et al., 2019). Therefore, in order to fill the gap, the current study is aimed to thoroughly investigate the effect of CBT on the stress among women facing infertility by including more studies that have been published in the last 20 years.

METHOD

Research objectives

The major objective of the meta analytic study is to assess the effectiveness of CBT for reducing stress among infertile women. The study's specific goals are to: 1) calculate the combined effect size of CBT in managing stress; 2) identify the moderating role of intervention duration in managing stress among infertile women; 3) evaluate the moderating role of intervention mode, such as in-person or online; and 4) evaluate publication bias in the studies that were included.

Inclusion criteria

The studies were chosen based on the following criteria: (1) studies with infertile women; (2) studies with at least one group receiving a cognitive behavioural therapy

intervention; (3) studies with a control group to compare the effectiveness of the intervention; and (4) studies with stress as the outcome variable.

Exclusion criteria

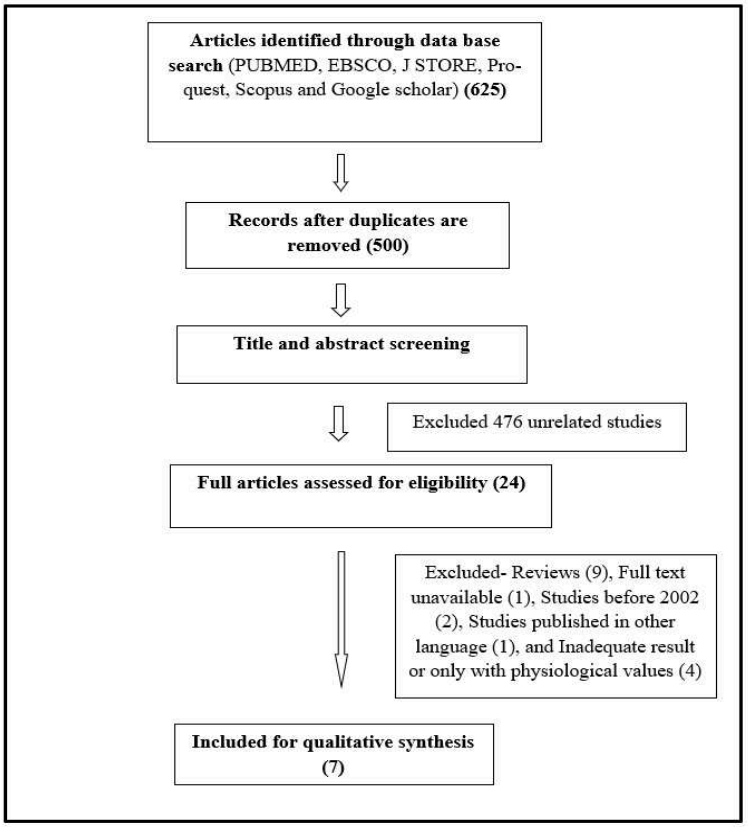
Studies that don't fit the aims are excluded using the following criteria. (1) Studies published in two publications. (2) Studies with insufficient data from the first study or inconvertible data. (3) Case studies, qualitative research, and review studies are examples of studies without quantitative data. (4) Research projects where subjects in the intervention group get medicine or other therapies. (5) Articles published before 2002; (6) articles published in conference proceedings that are abstract-only; and editorials, and books.

Search Strategy and study selection

The literature search was done in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page, 2021). The focus of the current review is on studies that employed stress management techniques based on cognitive behavioural therapy to assist infertile women. PUBMED, EBSCO, JSTOR, Proquest, Scopus, and Google Scholar were utilised to conduct a thorough search for studies. Studies published in English between 2002 and 2022 were analysed. The papers were searched using keywords, including “infertility”, “IVF”, “psychological intervention”, “CBT”, “stress”, “cognitive behaviour therapy”, and “cognitive therapy”. These keywords were combined with terms linked to outcome research, such as "effect," "efficacy," or "evaluation."

The eligible studies were chosen in two phases by the reviewer from the 625 publications that were obtained from the six databases. Prior to screening the title and abstract, 125 duplicates were eliminated with the help of Microsoft Excel. The titles and abstracts of the remaining 500 publications were scrutinised and those papers that did not follow the inclusion and exclusion criteria, were discarded. A total of 24 publications were chosen for full-text screening. During the full-text screening, nine review papers were rejected because they lacked quantitative data. One study did not have access to the whole text, and one study did not have translations accessible. Studies done prior to 2002 were also disregarded (2 studies). Two studies were excluded as they contain only physiological measures of stress and two studies contained inadequate data. Finally, seven studies were found eligible for analysis. The PRISMA flow chart of the search strategy is given in Figure 1.

Figure 1. Flow Chart Of The Search Strategy



Quality Assessment

Cochrane criteria were used to evaluate the selected papers (Higgins & Green, 2005). The following are the six Cochrane recommendations criteria: 1) The process of assigning participants at random to the experimental and control groups in order to compare them. 2) The process of concealing the allocation sequence is referred to as allocation concealment. 3) Blinding of research participants and staff is the method used to keep study participants and staff from knowing which intervention they would get 4) Blinding of result include details of the steps taken to keep outcome assessors from knowing about the intervention. 5) Incomplete result data occurs when one or more crucial outcomes, such as attrition and study exclusion, are not properly mentioned. 6) Selective reporting indicates whether only selected results are reported. Each study's quality was assessed using these criteria, and the results are summarised in Table 1.

Table 1. Quality Assessment Of The Selected Studies Based On Cochrane Criteria

Sl No.	Study	Randomization	Allocation concealment	Blinding of participant and personnel	Blinding of outcome assessment	Incomplete outcome data	Selective reporting
1	Karaca et al.(2019)	Low risk	Unclear	Unclear	Unclear	Low Risk	Low Risk
2	Zahra et al.(2019).	Low risk	Low Risk	Unclear	Unclear	Moderate Risk	Moderate risk
3	Faramarzi et al. (2013)	Low risk	Unclear	Unclear	Unclear	Low Risk	Low Risk
4	Mosalanejad et al. (2012).	Moderate Risk	Moderate Risk	Unclear	Unclear	Low Risk	Low Risk
5	Mosalanejad et al.(2012).	Moderate Risk	Unclear	Unclear	Unclear	Low Risk	Low Risk
6	Haemmerli et al. (2010).	Low risk	Unclear	Unclear	Unclear	Low Risk	Low Risk
7	Sexton (2010)	Low risk	Unclear	Unclear	Unclear	Low Risk	Low Risk

Meta-analysis

The primary objective of the study is to determine how cognitive behaviour therapy can help women facing infertility to manage stress. Comprehensive Meta-Analysis (CMA) software was used for analysis and the pooled effect size was determined. Since there was a wide variation in the effect size between studies, the random effect model was chosen over the fixed effect model. To reduce type II error, the results of the random-effects model were tested using 95 percent confidence intervals (*CI*).

There can be variation in the intervention effect across many studies, which can be due to clinical or methodological variance, rather than random error. This is termed heterogeneity and it is measured using two indexes- *Q* statistics, and I^2 statistics. When the *Q value* is significant, homogeneity is rejected, suggesting that the true effect size may vary from one study to the next (Borenstein et al., 2009). The I^2 statistic, a more precise measure, describes the percentage of variability across studies. A proportion of 25%, 50%, or 75% indicates a high, moderate, and low heterogeneity (Higgins et al., 2003). To understand the factors that contribute to heterogeneity, subgroup analysis was done using the following moderators. 1) the number of sessions in the intervention: studies with fewer than five sessions were classified as short-duration interventions. Studies that lasted six to ten sessions were classified as moderate duration interventions, whereas those that lasted longer than ten sessions were classified as long duration interventions. 2) Intervention mode: intervention administered in one to one basis in the clinic is referred to as face-to-face intervention and intervention administered in an online mode is considered as an internet-based intervention.

Another important consideration in meta analytic studies is publication bias. It is quite natural that studies with negative outcomes and those with non-significant findings may not be published in a peer-reviewed journal. As a result, they may not be unavailable for analysis

for the researchers and it can lead to publication bias (Borenstein et al., 2009). To understand whether publication bias has influenced the studies or not, the present study used the following indices: 1) A funnel plot: It is a graphical representation that shows the effect size vs the precision of the study. In the absence of publication bias effect size of the individual studies will be symmetrically distributed around the combined effect size. 2) Orwin's fail safe number: It is defined as the number of nonsignificant unpublished studies needed to make the overall significant effect to non-significance (typically calculated at the .1 level) (Orwin, 1983). 3) Egger's test: It is a type of regression analysis of the estimated intervention effect on precision, (usually measured in terms of standard errors). In the absence of publication bias it is predicted to be zero.

RESULTS

The main objective of the study is to understand the effectiveness of cognitive behavioural therapy in reducing stress among infertile women. The databases such as PubMed, EBSCO, Scopus, Proquest, and Google Scholar were used to conduct a thorough search. Seven studies, comprising a total of 419 women with 211 in the intervention groups and 203 in the control, were included in the meta-analysis. All of the studies included in the analysis had at least two groups, one receiving CBT-based interventions and the other receiving regular care. Table 2 summarises the essential characteristics of each trial, including study design, the kind of psychological intervention delivered, number and duration of sessions, and outcome measure.

Table 2. Basic Characteristics Table

Sl. No	Author	Treatment category	Duration of Rx	Design	Mean age	sample
1	Karaca et al. (2019)	Cognitive behavioural group therapy	11wks	RCT	30.46	Infertile women: EG= 46 and CG= 48
2	Zahra et al. (2019).	Counselling based on CBT	10 sessions	RCT	20-40 years	50 infertile women: EG=25, CG=25
3	Faramarzi et al (2013)	Group CBT	Two-hour group CBT session for 10 weeks.	RCT	29	89 infertile women have undergone IVF: EG: 29; CG:30

4	Mosalanejadet al. (2012).	CBT + stress management+Emotional disclosure (E-therapy)	24 sessions- 3 months, as a 2 hour weekly meeting.	RCT	30	Primary infertile women; EG=32, CG=33
5	Mosalanejadet al. (2012).	CBT	15 session- 4 months	experimental study	30	31 women undergoing IVF: EG-16; CG-15.
6	Haemmerli et al. (2010).	Internet- based program encompassing an interactive self-help guide based on CBT	13 session- 8 weeks	RCT	33.5	89 participants : EG=48 : CG= 41
7	Sexton (2010)	Cognitive-behavioural therapy (CBT) -Web based bibliotherapy for patients using ART	4 weeks	RCT	32.6	Women seeking medical reproductive technologies: EG= 15: CG=16

RCT- Randomised Control Trial, ART- Assisted Reproductive Technologies, IVF- In Vitro Fertilisation, CBT- Cognitive Behaviour Therapy, FPI: Fertility Problem Inventory, IDS- Infertility Distress Scale

All the reviewed studies had multiple sessions with an average time of approximately 1–1.5 hours per session. The study conducted by Mosalanejad et al. (2012) used the highest number of sessions, that is, 24 sessions for the study. Out of 7 studies, 4 studies employed face-to-face weekly intervention sessions, and 3 studies employed internet-based intervention.

The combined effect size was found to be 1.279 (*Hedge's g*) which is found to be significant at .01 level. The Forest plot clearly shows that the effect size between studies varies from 0.252 to 2.435. When the effect size of the individual studies is analysed, it is seen that the study conducted by Karaca (2019) has shown the highest effect size (*Hedge's g* = 2.435) and it offered 11 weekly group CBT sessions. The study conducted by Haemmerli et al. (2010) and Sexton (2010) found to have the lowest effect size and both employed internet-based CBT. This clearly shows that there is a great variation in effect size across studies and heterogeneity was evaluated using Q value and I^2 statistics. The Q value was found to be 60.958 which is found to be significant at .01 level. I^2 value, which is an indication of the percentage of heterogeneity, is found to be 90.157. To understand the potential factors for heterogeneity, moderator analysis was done for the selected variables namely mode of intervention delivery and duration of the intervention session

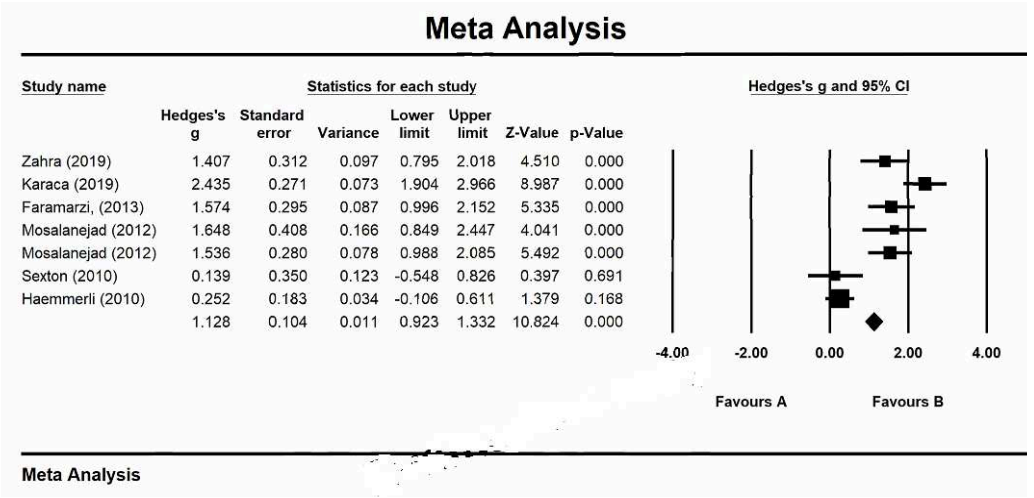


Figure 2. Forest Plot On Stress

Out of seven studies, four studies used face-to-face intervention in a clinical setting, and three studies used intervention with the help of the internet and clients could access the package from remote places. The moderator analysis based on the mode of intervention revealed that face-to-face cognitive behaviour therapy (*Hedges' g* = 1.788) is found to be more effective in reducing the psychological stress associated with infertility compared to internet-based CBT (*Hedges' g* = .644).

Among the 7 studies which evaluated the effectiveness of CBT on stress among infertile women, 3 studies used more than 10 sessions (Long duration), 3 studies used a moderate number of sessions (between 6 and 10) and one study used less than 5 intervention sessions. Moderator analysis revealed that studies with a greater number of sessions (*Hedges' g* = 1.897) and a moderate number of sessions (*Hedges' g* =1.053) have a high effect size. And studies with a few numbers of sessions (below 5 sessions) were found to have a low effect size (*Hedges' g* = .139).

Table 3. Moderator Analysis Based On Mode Intervention Administered And Duration Of Intervention

Outcome measures	Criteria	Subgroup	N	Hedges' g	95% CI
Stress	Mode of administration	Face-to-face intervention	4	1.788**	1.34 - 2.13
		Internet-base	3	.644	.17- 1.46

		d intervention			
	Number of sessions	Long	3	1.897**	.31- 2.514
		Medium	3	1.053*	.73-1.83
		Short	1	.139	.18- 1.07

*Significant at .05 **Significant at .01

Publication Bias

A funnel plot is a basic scatter plot, showing each study's effect size against its precision, usually in terms of standard error, providing first-hand information about publication bias (Light & Pillemer, 1984). When asymmetry is more pronounced, bias is more likely to be present. As funnel plots show an asymmetrical distribution, it indicates that there is a chance for publication bias. Since the funnel plot does not give a precise measure of publication bias, Orwin's fail-safe number and Egger's intercept are also used for analysis.

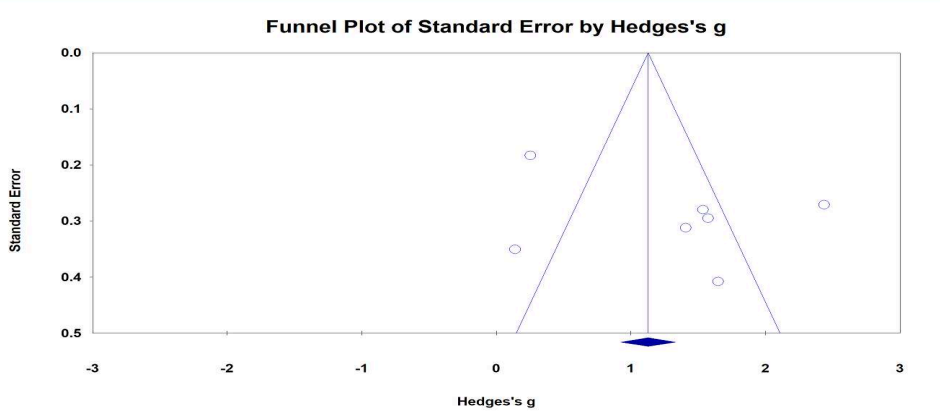


Figure 3. Funnel Plot of Stress

Orwin's fail-safe number gives the number of studies with average effect sizes (ESFS) that would lower the combined effect to the criteria value (Orwin, 1983). Orwin's fail-safe value was found to be 72 (effect size of 0.10). This is the required number of missing studies to lower the impact size to a negligible value. As the number increases the chance for publication bias decreases and in the present study it is seen that there is less chance of publication bias.

Egger's intercept allows for a more accurate estimate of publishing bias. The asymmetry is quantified by the regression line's intercept, and a significant p-value indicates the possibility of publishing bias. Egger's regression intercept was found to be 5.67, ($t = 1.19$, $df = 5$, $p = .143$), which is not significant at .05 level. Therefore eggers' regression coefficient indicates that the possibility of publication bias is very low.

DISCUSSION

The present study aimed to analyse the effectiveness of cognitive behavioural therapy on stress among women facing infertility. The result clearly shows that cognitive behaviour therapy is effective in reducing stress (Hedges' g = 1.267) among infertile women. This finding contradicts the result of the study conducted by Abdollahpour et al. (2021) which included only 3 studies. The present study included more studies and that may be the reason for a different result.

The measures of heterogeneity were calculated using the Q value and I^2 statistics and it clearly indicates high heterogeneity. So, in order to analyse the potential contributors to heterogeneity, moderator analysis was done based on the mode of intervention delivered (face-to-face intervention and internet-based intervention pattern) and duration of intervention.

Among the 7 studies, four studies administered CBT through face-to-face sessions in a clinical setup, and 3 studies designed an intervention that can be administered via online mode. While analysing the relative effectiveness of face-to-face intervention and internet-based intervention, the combined effect size of face-to-face intervention (Hedges' g = 1.788) is high compared to the internet-based intervention strategies (Hedges' g = .644). When the internet-based interventions are closely examined, it can be seen that study conducted by Mosalanejad et al. (2012) who combined Cognitive Behaviour therapy with stress management and emotional disclosure using art therapy, found to have a high effect size (Hedges' g = 1.648) which is comparable to effect size of face to face intervention. This clearly indicates that though internet-based interventions cannot substitute face-to-face interventions, the efficacy of internet-based interventions can be improved through various methods and should be tested through studies. Internet-based interventions might be a good option, especially among infertile women as it reduces the number of visits to the clinic and saves their time and money. However, it should be used with caution ensuring that the participants are benefitted from the procedure and get opportunities for one-to-one interaction and group interactions. The possibility of combining internet-based intervention and face-to-face sessions should also be reviewed and tested.

While analysis of moderating effect of the duration of interventions, long-duration interventions, and moderate-duration interventions was found to have a high effect size, whereas short-duration interventions indicated a low effect size. A meta-analysis conducted by Hammerli et al. (2009) also suggested that long-duration interventions were more effective than shorter ones. This clearly indicates that therapy should be given for an adequate time to make it more effective. People might take time to understand the automaticity and negative consequences of their own thought processes and learn a new pattern of thinking. This process can happen only with the help of professional support and conscious effort from the person.

Implications

In order to manage the stress connected to infertility, cognitive behavioural therapy might be employed in combination with reproductive treatment procedures. Based on moderator analysis, it is advised to apply treatments with a moderate length or longer duration (at least five weeks). Practitioners may customise different therapy procedures based on the client's difficulties, which may include cognitive behavioural approaches, relaxation measures, or stress reduction programs. Further studies can also investigate the effectiveness of internet-based intervention. Clients with low-intensity difficulties who can handle

themselves can be given self-directed treatment, while those who require more assistance can be provided with more direct intervention.

Strengths and limitations

A broad search was performed as per the PRISMA guidelines. A detailed evaluation of the methodological quality of each study was done using Cochrane quality assessment criteria. Heterogeneity and publication bias were also assessed. Moderator analysis was done on each variable based on the mode of administration of intervention and the duration of interventions. Publication bias was also analysed using a funnel plot, Orwin's fail-safe N, and Egger's intercept. There are also some limitations to the study. The studies were collected mainly from EBSCO, google scholar, PUBMED, Jstor, Sage publishers, and Proquest. Other databases also could have been included in order to widen the search. The study focused only on women facing infertility. Future studies can also include both men and women.

Conclusion

Based on the findings, Cognitive behaviour therapy-based interventions are found to be effective in reducing stress among women facing infertility.

List of abbreviations

ART - Assisted Reproductive Technologies,
IVF - In-vitro Fertilisation
CBT - Cognitive Behaviour Therapy
EG - Experimental Group
CG - Control Group
RCT - Randomised Control Trial
CI - Confidence Interval

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PROTECTIVE BEHAVIOURS DURING THE COVID-19 PANDEMIC

UDC: 616.98COVID-19:159.9

PREDICTING INTENT TO VACCINATE AGAINST COVID-19 BASED ON EMPATHY, GERM AVERSION, AND BELIEF IN COVID-19 RELATED CONSPIRACY THEORIES

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Abstract. When attempting to understand the Coronavirus vaccination hesitancy it is crucial to examine the risk and protective factors connected to immunisation intent. We tested different psychological factors as predictors of COVID-19 vaccination intent: Empathetic concern (EC), Perspective taking (PT), Germ Aversion (GA), and Belief in COVID-19 related conspiracy theories (BCRCT) in Study 1, and in Study 2: Belief in superstitions (BS), BCRCT, and pseudo-profound bullshit (PPB). Adults in Serbia were interviewed in person in two representative stratified three-stage probability sampling procedures (Study 1, $N = 1201$, reduced to $N = 809$; Study 2, $N = 1150$). In Study 1, all correlations with vaccination intent and the regression model were significant, while in Study 2, only belief in COVID-19 related conspiracy theories was a significant correlate and predictor of vaccination intent. Our findings suggest that promoting citizens' Empathetic concern, and lowering people's beliefs in COVID-19 related conspiracy theories will increase vaccine uptake in the future. Higher Germ aversion has also shown to positively predict vaccine uptake. With this in mind, it's best to combine emotional and cognitive factors for enhancing vaccination coverage.

Keywords: vaccination intentions, coronavirus, conspiracy theories, empathy, superstition

INTRODUCTION

In light of the COVID-19 pandemic, the topic of vaccine hesitancy has gained more attention than usual, as vaccines are a safe and effective way to battle infectious diseases with pandemic potential, and have saved millions of lives in the past decade (MacDonald et al., 2020). European populations were among the least vaccine confident in the world in 2016 (Larson et al., 2016; Larson, 2018). Serbia is among the countries with the lower vaccine acceptance (Milošević Đorđević et al., 2021). Numerous studies explored possible factors contributing to vaccine intentions, from socio-demographic to cognitive and emotional, value-oriented factors. Some regularities were empirically confirmed: stronger COVID-19 vaccination intention is associated with empathy (Pfattheicher et al., 2022) anxiety and health-related fears (Bendau, 2021), as well as belief in conspiracy theories (Jolley & Douglas, 2014; Milošević Đorđević et al. 2021; Pertwee et al., 2022; Romer & Jamieson, 2020). With this in mind, understanding the reasons for vaccination hesitancy has the potential to help us make better strategies to address issues such as ending the coronavirus pandemic through the mechanism of herd immunity.

Regarding community protection, vaccination provides a personal benefit to the vaccinated individual however it also indirectly provides a social benefit to unvaccinated others who cannot be vaccinated. Because of this benefit to others, vaccination might be

linked with empathy and this connection will be explored in the current research. Empathy is defined as "sharing another's feelings by placing oneself psychologically in that person's circumstance" (Lazarus & Lazarus, 1996), and has two different aspects: cognitive and emotional. Cognitive factor refers to the ability to imagine how others feel and to take their perspective. Emotional factor is more visceral, connected to helping behaviour (Davis, 1983; Mehrabian& Epstein, 1972; Stotland et al.,1978). Empathy for those most vulnerable to the virus promotes motivation to get vaccinated against COVID-19 (Pfattheicher et al., 2022).

Another possible emotion-based reason to not vaccinate is a lack of fear of being infected. Feeling personally at risk of infection predicted a greater propensity to engage in hand washing and social distancing behaviours (Wise et al., 2020). Both perceived personal risk and vulnerability to disease contributed significantly to the explanation of variance of the intent to adhere to COVID-19 prevention measures (Hromatko et al.,2021). Mentioned study (Hromatko et al., 2021) has also shown that participants who considered themselves or their significant others to be in high-risk COVID-19 group, and those with higher germ aversion had a higher intent to adhere to measures of suppressing the coronavirus. However, another study found that higher degrees of risk (in terms of local cases of disease) correspond to readiness to vaccinate (Baumgaertner et al., 2020) although studies do not comply completely on this issue (Hromatko et al., 2021).

We are witnessing that everyday life has been filled with hundreds of superstitious beliefs during the COVID-19 pandemic, in particular in social media. Thousands of messages are made viral by unknown sources every day, and many people, including the new digitally literate, forward such messages, without the aim to harm anyone. Superstitious beliefs, an assumption that a connection exists between co-occurring, non-related events (Drinkwater & Dagnall 2018) have been as prominent as ever, and social media can both counter and encourage these beliefs (Dutta, 2020). Conspiracy belief has also been on the rise since the beginning of the COVID-19 (Uscinski et al., 2020; Douglas, 2021). Conspiracy theories are explained as historical, ongoing, or future events that point to a main causal factor: a group of powerful persons, the conspirators, acting in secret for their own benefit against the common good. This definition excludes theories positing benevolent actors toiling away in secret for the good of all mankind (Ucsinski, 2018). Conspiracy beliefs flourish in unstable circumstances and have been confirmed as a barrier of vaccination intentions (Jolley& Douglas, 2014; Milošević Đorđević et al., 2021; Pertwee et al., 2022; Romer& Jamieson, 2020). Factors contributing to conspiracy theory acceptance are high intuitive thinking and low level of pre-conclusion information gathering (Willem, 2017), while analytic thinking suppresses it (Swami, 2014). An analytic thinking style could be described as a rational system (conscious, deliberate, effortful, slow, affectively neutral, and rule-based) as opposite to an intuitive thinking (fast, automatic, governed by habit, susceptible to affective reactions, and difficult to control consciously) (Swami, 2014). A study suggests that belief in some conspiracy theories stems from the previously mentioned intuitive system, but people justify and maintain them using the rational system, which includes motivated reasoning. If a given conspiracy theory happens to align with a person's inner belief, they will more likely use the second system to justify their belief in it (van Prooijen & Acker, 2020). High spirituality was also marked as one of the most significant predictors of belief in conspiracy theories (Gligoric et al., 2021). Furthermore, people more inclined to believe in conspiracy theories and superstitions perform less vaccine acceptance and public trust (Salamet al., 2021, Jennings et al., 2021, Hossain et al., 2021).

One indicator of intuitive thinking style is pseudo-profound bullshit (PPB) belief in a statement consisting of buzzwords randomly organised into statements with syntactic structure but no discernible meaning (e.g., "Wholeness quiets infinite phenomena")

(Pennycook et al., 2015). An important adjutant of PPB is vagueness. Furthermore, vagueness and meaning are by definition at cross purposes, as the inclusion of vagueness obscures the meaning of the statement and therefore undermines or masks the "deep meaning" (i.e., profundity) that the statement purports to convey. The concern for "profundity" reveals an important defining characteristic of bullshit (in general): it attempts to impress rather than inform; to be engaging rather than instructive (Pennycook et al., 2015). PPB statements are associated with an intuitive thinking style and supernatural beliefs, higher belief in conspiracies, consumption of alternative medicine, and higher spirituality (Cavojova et al., 2019). The limited amount of reliable scientific information during the beginning of the COVID-19 outbreak likely encouraged people to search for explanations that did not yet exist as the science underlying the biology and spread of the virus was still being investigated. This void of scientific consensus may have opened a wide avenue for the spread of pseudo-scientific and outright false information. In the context of threat, where feelings of uncertainty and fear make it difficult to anticipate or plan actions, people compulsively search for explanations and tend to base them on readily accessible pieces of information (Hogg and Adelman, 2013; Kossowska and Bukowski, 2015; Salvi et al.,2021). Such a lack of reliable information, together with the fear of infection, might have compelled people toward pseudo-profound beliefs, as well as overclaiming confidence in unreliable information to make up for a lack of reliable information and overcome uncertainty-induced anxiety (Salvi, et al., 2021).

Considering previous research found that vaccination behaviour presents a complex subject (Larson et al., 2014), the goal of our research was to map psychological factors connected to vaccinal intent. The specific data about unvaccinated individuals is relatively scarce compared to the importance of the topic. Thus, we aimed to explore the psychological factors that are likely to play a role in an individual`s vaccination intention.

We tested the potential psychological factors in predicting COVID-19 vaccination intent in Serbia in two studies. In study 1 we hypothesised that higher belief in COVID-19 related conspiracy theories will predict lower intent to vaccinate against COVID-19, while higher Empathic concern, Perspective taking, and Germ aversion will be associated with higher intent to vaccinate. In study 2 we hypothesised that a stronger belief in superstitions, COVID-19 conspiracy theories, and PPB will result in lesser COVID-19 vaccine intentions among the adult Serbian population.

METHOD: STUDY 1 & STUDY 2

Sample

Two studies were conducted. Study 1 included a total of 1201 adults (aged 18+) in Serbia that were recruited in a stratified three-stage probability sampling procedure in September 2021. However, since the questionnaire used was large, the sample size used in the analysis was reduced to 809 respondents to include only those that answered all questions. The missing answers on our main variable "Vaccine intention" made up less than 1.5%, while on almost all other variables it was less than 5%. In Study 2 a total of 1150 adult (aged 18+) citizens of Serbia were recruited for the interview within the same sampling procedure in November 2021. Both studies were conducted by the Institute of Political Studies, Belgrade and the procedure for sample selection was nationally representative of the adult population living in Serbia. The sampling frame was based on the data from the 2011 Census. Sampling was done in three stages. The first stage of sampling was done by polling

station territory. The second stage included households selected by random route technique starting from the randomly selected addresses (seven households by sampling points). The third stage included respondents randomly selected within households. The summary of the sample's demographic parameters for Studies 1 and 2 are shown in Table 1.

Table 1. Sample structure in Study 1 and Study 2

Sample structure		Study 1 Percent %	Study 2 Percent %
Gender	Female	47	50
	Male	53	50
Average age		43	46
Settlement type	Rural	22	28
	Urban	78	72
Average time spent of education		13 years	13 years
Total number of respondents		1201	1150

Instruments

Vaccinal intent: in both studies was measured with 2 items where participants answered the questions of whether they intend to vaccinate or are vaccinated with a double dose, whether they intend to get vaccinated with a 3rd dose when it becomes available (Study 1 α = .94; Study 2 α = .93). Respondents positioned themselves on a 7-degree scale depending on their opinion on the topic.

Study 1

Empathy. The scale used to measure empathy in this research is based on a multidimensional approach. Rather than treating empathy as a single unipolar construct (i.e., as either cognitive or emotional), the rationale underlying the scale is that empathy can best be considered as a set of constructs, related in that they all concern responsiveness to others but are also clearly discriminant from each other. The scale originally has four subscales, but only two are used in this study. The 7 items used from the Perspective Taking (PT) scale assessed the tendency to spontaneously adopt the psychological point of view of others (e.g., "I sometimes find it hard to see things from somebody else's point of view") The 5 items used from the Empathic Concern (EC) scale assessed "other-oriented" feelings of sympathy and concern for unfortunate others (e.g., "When I see someone getting taken advantage of, I feel the need to protect them"). Participants answered each item on a 7-point Likert scale, Cronbach Alpha for EC was α = .73, while for PT α = .66 (Davis, 1983).

Germ Aversion: From the Self-Report Scale of "Perceived vulnerability to disease" Subscale 2, Germ aversion, was used. This measure assesses emotional discomfort at the potential transmission of infectious diseases with items like "Being in the presence of sick people doesn't disturb me." Participants responded to each of the 7 items with endpoints of

the 7-point Likert scale labelled as ‘‘strongly disagree” and ‘‘strongly agree”, Cronbach Alpha being α = .60 (Duncan et al., 2009).

Belief in COVID-19 related conspiracy theories: Five statements measuring belief in COVID-19 conspiracy theories were answered by participants for example: “Coronavirus was purposefully created in, and released from, a biochemistry lab in Wuhan, China’’ and ‘‘The implementation of 5G technology is a means of deliberately spreading Coronavirus’’. Participants answered on a 7-point Likert scale where 1 = strongly disagree, 7 = strongly agree, Cronbach Alpha α = .90 (Biddlestone et al.,2020).

Study 2

Belief in COVID-19 related conspiracy theories: Participants were asked to answer nine statements regarding belief in *COVID-19 related* conspiracy theories using a 5-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”), Cronbach Alpha being α = .88. (Biddlestone et al.,2020; Shapiro et al., 2016)

Belief in superstitions: Belief in superstitions was measured using ten statements, with a 6-point Likert Superstitious Thinking Scale. Statements such as “It is a sign of bad luck if a black cat crosses your path,” ranged from 1 (“strongly disagree”) to 6 (“strongly agree”), with Cronbach Alpha being α =.88. (Toplak et al.,2011),

Pseudo-profound bullshit: Belief in pseudo-profound bullshit was measured using eight statements, using a 5-point Likert Bullshit Receptivity Scale. Statements such as “Our minds stretch through space and time like waves in the ocean of one mind” ranged from 1 (“not at all profound”) to 5 (“very profound”), Cronbach Alpha being α = .90 (Pennycook et al., 2015; Gligorić and Vilotijević, 2020).

RESULTS: STUDY 1 & STUDY 2

Results in Study 1

As can be seen in Table 2, all variables included in study 1 were correlated significantly with vaccination intent. Those with higher Germ aversion scores also showed higher intent to vaccinate. Both kinds of empathy were also found to significantly positively correlate, with the connection being slightly stronger for Empathic concern than for Perspective taking. Belief in COVID-19 related conspiracy theories had the strongest significant correlation, where those who had a higher BCRCT score showed less intent to vaccinate. This is in line with our hypothesis.

Table 2. Descriptive Statistics and Correlations for Study Variables

Variable	*n*	*M*	*SD*	1	2	3	4
1. Germ aversion	809	4.68	1.19	-			
2. Empathic Concern	809	4.52	.92	.28**			
3. Perspective Taking	809	4.37	1.62	.2**	.58**		
4. Belief in COVID-19 related conspiracy theories	809	3.74	2.08	-.13**	-.19**	-.09**	
5. Vaccination intent	809	4.60	2.15	.22**	.24**	.18**	-.31**

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

Table 3 shows that the regression model was significant, $F = 36.92$, $p < .01$, $R^2 = .16$, with Belief in COVID-19 related conspiracy theories ($\beta = -.27$, $t = -8.10$, $p < .01$) being the most significant negative predictor, followed by Germ aversion ($\beta = .14$, $t = 4.18$, $p < .01$), and Empathic concern ($\beta = .12$, $t = 2.89$, $p = .00$) showing significant positive predictive value. So far, the results confirm our hypothesis. Perspective taking ($p = .14$) was a non-significant factor, contrary to our expectations.

Table 3. Results of Linear Regression Analysis

			95% CI	
Variable	*Beta*	*SE*	*B*	*p*
1. Germ aversion	.24	.06	.14	.00
2. Empathic concern	.21	.07	.12	.04
3. Perspective taking	.14	.09	.06	.14
4. Belief in COVID-19 related conspiracy theories	-.36	.04	-.27	.00

Results in Study 2

We tested whether belief in COVID-19 related conspiracy theories, and superstitions and PPBs would result in less COVID-19 vaccine intention. According to our correlation results (Table 5), only COVID-19 related conspiracy belief had a significant correlation with vaccine intent among variables included in the study, $r = .42$, $p < .01$, whilst superstition and PPB were found to be non-significant predictors.

Table 4. Descriptive Statistics and Correlations for Study Variables

Variable	*N*	*M*	*SD*	1	2	3
1. Superstition	1138	2.43	.95	-		
2. Belief in COVID-19 related conspiracy theories	1124	3.01	.9	.13**	-	
3. Pseudo-profound bullshit	1132	2.74	.86	.24**	.05	-
4. Vaccination intent	1146	4.54	2.08	-.01	-.42**	-.01

Regression results (Table 6) were significant $F_{(53,1)} = 238.3$, $p < .01$, with $R^2 = .18$, suggesting that 18% of vaccine intent is predicted by BCRCT. BCRCT ($\beta = -0.2$, $t = -15.4$, $p < .01$) negatively predicted vaccination intention, this was congruent with our hypothesis.

Table 5. *Results of Linear Regression Analysis*

Variable	Beta	95% CI *SE*	β	*p*
Belief in COVID-19 related conspiracy theories	-1.02	.07	-.2	.00

DISCUSSION: STUDY 1 & STUDY 2

In line with previous studies (Jolley & Douglas, 2014; Milošević Đorđević et al. 2021; Pertwee et al., 2022; Romer & Jamieson, 2020) belief in COVID-19 related conspiracy theories was found to be the most significant factor in both studies, the higher it was the more likely individuals were to show vaccination hesitancy. Germ aversion was the second-best predictor, showing that the higher the Germ aversion the higher the intent to vaccinate, in line with our hypothesis and previous research (Hromatko et al., 2021). The emotional aspect of empathy, Empathic concern, also had an important role in prediction; the higher it was the higher the vaccination intent. Since the emotional aspect of empathy has previously been connected to helping behaviour (Stotland et al., 1978) this finding is unsurprising. Concern for collective health has also been shown to correlate to practising hygiene routines and social distancing, which are the preventative measures recommended during a virus outbreak (Lachowicz-Tabaczek & Kozłowska, 2021). Furthermore, previous research found that when empathetic response was high, increased threat perception was associated with an increased likelihood of endorsing key health precautions (like vaccination, handwashing, and disinfectant use). When empathy was low, however, perceived threat displayed no significant effect (King, et al.,2016). On the other hand, the cognitive aspect of empathy, Perspective taking, wasn't a useful predictor. Vaccination acceptance was higher when people have collectivistic tendencies, when empathy was invoked, especially when the similarity between victims of COVID-19 and the person were emphasised (Leonhardt & Pezzuti, 2022). Thus,

empathy may play an especially important role when it comes to certain socio-demographic groups, like young people deciding to vaccinate (Drążkowski et al.,2022). With this in mind, we suggest future research to further explore the connection of empathy and fear as a predictor of vaccination intent along with the difference in the predictive value of emotional factors focused on self (such as Germ aversion) and those focused on others (Empathic concern).

Since both correlation and multiple regression analysis showed BCRCTs as being significant in negatively predicting vaccination intent, the focus in strategies for shaping public health behaviour should be on lowering people's belief in conspiracy theories, rather than debunking superstitions and PPBs. Belief in conspiracy theories could be linked to people's initial way of processing information around them through an intuitive thinking system which is automatic, susceptible to affective reactions and unconscious (Swami et al., 2014); therefore we argue that one way to promote one's analytic thinking style which is conscious, deliberate and effectively neutral (Swami et al., 2014) is appealing to people's rationality. That might in turn help to reduce conspiracy theory beliefs governed by a need for certainty. When people are in uncertain situations, they tend to believe in conspiracy theories as a means of procuring a fast and believable answer to rid them of their uncertainty. This, in turn, creates a "Jumping to conclusions-bias," which was found to be associated with a higher conspiracy theory acceptance (Pytlik et al., 2020). Therefore, providing a sense of security in sudden situations could result in less of a need for conspiracy theory belief. Lastly, conspiracy belief tends to downplay the threat to the individual and the community or suggest other means of confronting it (Glanz et al.,2008), which is another possible reason why BCRCT made the best predictor in our research. If people use them to calm their distress, a different way of addressing distress is a good way to fight vaccine hesitancy.

Limitation

Although we analysed two large nationally representative studies with seven psychological predictors of vaccine intentions in total, our studies as others have some limitations. We analysed measures from only one period (end of year 2021), not from longitudinal data. We can expect that vaccination intention is changeable, especially under different contextual factors (the strength of the pandemic and the availability of new vaccines). It would be good to check for findings presented in this paper in the future, by checking vaccination behaviour in general, not only immunisation against COVID-19. We measured two groups of variables in two studies, and we cannot completely compare the impact of each. In the second study, among all our hypothesised variables only one (Belief in COVID-19 related conspiracy theories) proved to be a significant predictor of vaccine intentions. In future research it would be good to scrutinise analytical and intuitive ways of thinking using different measures.

Conclusion

The strongest connection in both studies was found between belief in COVID-19 related conspiracy theories and vaccination intent. Lowering belief in conspiracy theories should be the main strategy in tackling vaccination hesitancy according to our studies. This could be done by continuous and massive debunking in all media platforms (more easily using social media). The presence and communication of scientific information about disease and vaccination should be a priority for the health system and society in general. This strategy should also lower the uncertainty of the situation, thus lowering the confusion and

distress people feel, in this way tackling both cognitive and emotional factors, considering their real-world connection. Different most popular health conspiracy theories should be investigated continuously further, to be able to respond promptly. However, a more effective strategy seems to be an inoculation against fake news, enhancing critical thinking and helping people resist misinformation (van Der Linden et al., 2020). Future research might investigate optimal strategies further. Promoting empathy on its own might be a successful strategy, though we advocate for an approach that combines both rational and emotional aspects. While Germ aversion might not be particularly desirable, our research shows it could be connected to higher vaccine uptake, therefore, protecting the individual from the virus. However, our results clearly pointed out that another direction for future research could be exploring the difference in predictive values of emotional factors based on whom they are focused on, oneself or others. In addition, we only assume that our findings could be generalised to all vaccine intentions, not only to vaccines against COVID-19.

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UDC: 616.98COVID-19:159.947.5

FEAR OF COVID-19 AND PERSONALITY TRAITS AS PREDICTORS OF MOTIVATION FOR VACCINATION

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Abstract. Our research was conducted with the aim of verifying whether fear of COVID-19 and personality traits are statistically significant predictors of motivation for vaccination. Previous results have shown that increased fear of COVID-19 predicts vaccination willingness 14 months later and self-estimated knowledge of conventional vaccines and COVID-19 vaccines, confidence in efficiency and safety of conventional vaccination were associated with a lower risk of vaccine hesitancy or resistance. The survey was conducted in April 2021, on a convenience sample of 119 participants, aged 18 to 70 (M = 27.66, SD = 11.97) in Serbia. In this research, a questionnaire that examines the psychological aspects of the COVID-19 pandemic (S-PACQ-19) was used for operationalization of fear of COVID-19 and motivation for vaccination, to which was added a questionnaire of personality traits (Big Five Inventory-10). The research is in the form of structured, non-experimental research – survey research. The results of linear regression indicate that the Level of willingness to be vaccinated (R^2 = 0.205, F(4, 114) = 7.37, p = .000) can be predicted based on the fear of COVID-19 (Fear of infection β = .096; Fear of lack of food β = .078; Fear for the future β = .072; Frequency of thinking about COVID-19 β = .325), while the Level of willingness to be vaccinated can also be predicted based on the main personality traits (R^2 = .107, F(5, 113) = 2.705, p = .024), (Extraversion β = .090; Agreeableness β = .108; Conscientiousness β = .077; Neuroticism β = .307; Openness β = .170). This research could be applied in psychotherapy, clinical psychology and counselling psychology, because it could help individuals with high levels of COVID-19 related fear.

Keywords: fear of COVID-19, personality traits, motivation for vaccination, level of willingness to be vaccinated

INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus (WHO Coronavirus disease (COVID-19), 2022). Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness. Anyone can get sick with COVID-19 and become seriously ill or die at any age (WHO Coronavirus disease (COVID-19), 2022).

Globally, as of 4:54 pm CET, 23 December 2022, there have been 651,918,402 confirmed cases of COVID-19, including 6,656,601 death cases, reported to WHO (World Health Organization). As of 13 December 2022, a total of 13,008,560,983 vaccine doses have been administered (WHO Coronavirus (COVID-19) Dashboard, 2022).

By December 23rd, 2022, a total of 2,439,730 confirmed cases of COVID-19 were registered in the Republic of Serbia, and a total of 209 patients are currently hospitalised with confirmed presence of the virus, while a total of 16 patients are on respirators. A total of 11,813,178 people were tested, and the total number of deaths since the beginning of the epidemic is 17,493 (percentage of mortality is 0.72%) (Statistical data about COVID-19 in Republic of Serbia, 2022).

As a solution to the problem of COVID-19, vaccines have emerged. Vaccines are medical preparations that contain a weakened alive or dead causative agent of a disease, and, in some cases, only a fragment of the causative agent that stimulates the body's immune response to produce antibodies (What are vaccines?, 2022). As the official statistics say, over 5 billion people are fully vaccinated currently (WHO Coronavirus (COVID-19) Dashboard, 2022).

On April 26th, 2020, the WHO counted seven COVID-19 candidate vaccines in the clinical evaluation phase and 82 more in the preclinical evaluation phase. This underlines the unprecedented efforts worldwide to find an effective vaccine against the Coronavirus SARS-CoV-2.

We are witnessing that the COVID-19 is a relatively new disease that has caused a pandemic, which has affected almost all aspects of life, especially the social and psychological aspects of personality. COVID-19 has resulted in both a physical and mental health crisis (Wang et al., 2020). Like any health disaster, the pandemic has generated fear, anxiety, stress, and emotional exhaustion (Arpaci et al., 2020; Satici et al., 2020; Taylor et al., 2020). It is noticeable that COVID-19 has led to the emergence of fear, which manifests itself in various forms: fear of infecting oneself and others, fear for one's own future and that of one's loved ones, fear of lack of food. As a consequence of the pandemic, preliminary psychological research has identified fear as a unique and negative psychological and emotional factor, for all groups and across genders (Martínez-Lorca, Martínez-Lorca, Criado-Álvarez, Armesilla, & Latorre, 2020).

There are many definitions of fear, for example: Fear is an automatic adaptive emotional response that occurs in stressful conditions in relation to a specific external danger (Steimer, 2002). Alternatively, fear is considered an unpleasant emotional state that is triggered by the perception of threatening stimuli (de Hoog, et al., 2008). In relation to the pandemic, fear can be a motivating factor that facilitates protective and preventive behaviour among individuals to avoid infection and in following pandemic health instructions (Nazari, Safitri, Usak, Arabmarkadeh, & Griffits, 2021). Extraordinary situations such as disease outbreaks and epidemics can induce fear among many people (Griffiths, 2020). Such fear has led to individuals committing suicide because they thought they had COVID-19 even though the autopsies showed that they did not (Goyal et al., 2020; Mamun & Griffiths, 2020).

The association between fear and health-related behaviours is complex. A possible explanation could be arousing fear in health communication (i.e., fear could be generated by messages that are perceived as threatening, so called ‘fear appeals’). Fear appeals have been much used to change people’s attitude and behaviour on a wide variety of topics (e.g., cigarette smoking, breast self-examination, sunscreen usage, and medication adherence) (Tannenbaum, et al., 2015).

Different research has shown that fear of COVID-19 is always present, but the level of fear varies in particular parts of the world. For example, Barbisch et al. (2015) describe how the confinement and mass quarantine associated with SARS and Ebola outbreak caused a sense of collective hysteria and fear and raised anxiety. However, the scores obtained by university students in Spain on the Fear of COVID-19 Scale (FCV-19S) (Martínez-Lorca, Martínez-Lorca, Criado-Álvarez, Armesilla, & Latorre, 2020) suggest the presence of fear, although the scores are not particularly high. In contrast to Ahorsu et al. (2020) in Iran and

Sakib et al. (2020) in Bangladesh, who reported high scores, data shows fear of COVID-19 can be considered medium-level or moderate, with this being similar to the findings of Reznik et al. (2020) in Eastern Europe.

COVID-19 has extraordinary spreading properties and is causing high rates of both morbidity and mortality (Lipsitch, et al., 2020). To respond to this situation, governments around the world have started to issue unprecedented public policies such as social distancing, isolation, and self-quarantine (Anderson, et al., 2020). The economic and psychosocial consequences of the COVID-19 pandemic have been far-reaching and unprecedented around the world (Griffiths, 2020). With the advent of vaccines, differences in the level of motivation for vaccination were noticeable.

Results within this topic showed that self-estimated knowledge of conventional vaccines and COVID-19 vaccines, and confidence in efficiency and safety of conventional vaccination were associated with a lower risk of vaccine hesitancy or resistance (Štěpánek , Janošíková , Nakládalová, Boriková, & Vildová , 2021). Decreasing fear of COVID-19, perceived susceptibility to the disease, and perceptions of personal control over reducing infection-transmission may impact future COVID-19 vaccination uptake (Phillips, et al., 2022). For example, COVID-19 vaccine safety and side-effects concerns impact nurses' intentions to accept the vaccine and may result in low acceptance rates (Rabi, Maraqa, Nazzal, & Zink, 2021). Democratic party membership and decreased level of religiosity predicted acceptance of a COVID-19 vaccine. Political party membership and religiosity are supported as influencers of COVID-19 vaccine willingness (Milligan, Hoyt, Gold, Hiserodt, & Otto, 2021), and this investigation suggests that these variables could represent potential targets for public health interventions aimed at increasing vaccine adoption.

As will be explained in the method section, we found the concept *Level of willingness to be vaccinated* as the most similar to the concept *Motivation to be vaccinated.* Level of willingness to be vaccinated relates to the level of desire for vaccination. Level of willingness to be vaccinated is studied in many surveys.

A European survey on willingness to be vaccinated against COVID-19 (Neumann-Böhme, et al., 2020) was conducted on a sample of 7664 participants. A majority of participants (73.9% from Denmark, France, Germany, Italy, Portugal, the Netherlands, and the UK) stated that they would be willing to get vaccinated against COVID-19 if a vaccine would be available. A further 18.9% of respondents stated that they were not sure, and 7.2% stated that they did not want to get vaccinated. The willingness ranged from 62% in France to approx. 80% in Denmark and the UK. The largest proportions of the population opposed to a COVID-19 vaccination were observed in Germany (10%) and France (10%), while France also had the largest group of people who were unsure about getting vaccinated (28%). There are significant differences in willingness to get vaccinated across genders and age groups. A significantly higher proportion of men were willing to get vaccinated than women. The willingness to be vaccinated was largest among men above the age of 55, while uncertainty ranged between 14 and 17% across all age groups. Males who were unwilling to get vaccinated tended to be younger with the largest share of 12% among the 18–24 year olds. Similarly, the trend for women who were unwilling to vaccinate seems also to follow the age categories. The uncertainty among women was higher in all age groups and largest for women between the ages of 45 and 54. Respondents who were unsure about being vaccinated stated as their main reasons potential side effects of a vaccine (this concern was more frequent among women than men) and belief that a vaccine might not be safe. A similar trend was found regarding the most frequently mentioned reasons and the gender differences for the concerns about side effects among those who were not willing to get vaccinated.

A study on a large convenience sample identified several factors associated with willingness to be vaccinated (Dorman, et al., 2021). Willingness to be vaccinated against COVID-19 varied significantly by gender, age, race/ethnicity, and level of education as well as by occupation. Being Hispanic, non-Hispanic Black, younger, female, first responders or blue collar workers was associated with less willingness to be vaccinated. Nevertheless, some of the same concerns were with related willingness to be vaccinated across all groups. Confidence in the safety and efficacy of the vaccine, concern for protecting others and belief in the seriousness of the disease were all associated with greater willingness to be vaccinated.

Willingness to be vaccinated against COVID-19 before the start of vaccination has been studied in Spain (Rodríguez-Blanco, et al., 2021). The logistic regression showed that being male, older than 60, married, retired, with a high level of education, or with a leftist political inclination, could increase the probability of accepting the COVID-19 vaccine. Disinformation and the lack of political consensus were the main sources of distrust. The patients with hypertension, immunodepression, hypercholesterolemia or respiratory disease, or who were overweight, showed a greater acceptance to the vaccine, while those with cancer took the longest to accept it. A low acceptance of the vaccine against COVID-19 was observed among the Spanish population in the phase prior to its availability, and the main fears of the population were identified.

Hesitancy for COVID-19 vaccines was investigated in Belgium. Research results show that a large proportion of the Belgian population is hesitant about vaccination against COVID-19, where it is established that there is higher vaccine hesitancy for COVID-19 vaccines than for other vaccines (Kessels, Luyten, & Tubeuf, 2021).

Willingness to be vaccinated has also been studied in Japan (Yoda & Katsuyama, 2021). On a sample of 1100 participants, 65.7% of them indicated a willingness to be vaccinated; among them were older age groups, those in rural areas, and those with underlying medical conditions. Males showed less hesitancy towards being vaccinated.

A study that is the most similar to our research has been conducted on a sample of 938 participants mainly across Europe and North America (Mertens, Lodder, Smeets, & Duijndam, 2022). Results of a logistic regression showed that increased fear of COVID-19 predicts vaccination willingness 14 months later, even when controlling for several anxious personality traits, infection control perceptions, risks for loved ones, self-rated health, previous infection, media use, and demographic variables. These results show that fear of COVID-19 is a relevant construct to consider for predicting and possibly influencing vaccination willingness. Nonetheless, sensitivity and specificity of fear of COVID-19 to predict vaccination willingness were quite low and only became slightly better when fear of COVID-19 was measured concurrently. Also, participants who did not want to be vaccinated had larger decreases in fear of COVID-19 over time than participants who did get vaccinated or wanted to get vaccinated. This indicates that other potential factors, such as perceived risks of the vaccines, probably also play a role in explaining vaccination willingness.

It is also noticeable that people with different personality traits have different attitudes towards vaccination. At the time of conducting this research we did not come across many papers dealing with this topic. As we witnessed these differences, we wanted to determine whether main personality traits are good predictors of motivation for vaccination (level of willingness to be vaccinated). Some research shows that main personality traits do not have a significant influence on willingness to be vaccinated.

The importance of the current research is reflected in a better understanding of attitudes towards vaccination based on the fear of COVID-19 and main personality traits. The study aims to provide valuable data to healthcare professionals. This data will help them assist patients in overcoming their fear of COVID-19 and managing personality-related

factors influencing vaccination decisions. By addressing and managing the fear of COVID-19 as an undesirable emotion, healthcare professionals can guide patients towards making vaccination decisions based on objective and credible reasons, prioritising their health.

Objective / hypothesis

Objective: To determine whether fear of COVID-19 and personality traits are statistically significant predictors of level of willingness to be vaccinated.

Hypothesis: Fear of COVID-19 and personality traits are statistically significant predictors of level of willingness to be vaccinated.

METHOD

Sample

The convenience sample consisted mostly of students at the university where the researchers study by themselves, and the rest of the participants were family members, friends and relatives of the researchers. The research was conducted as a mandatory pre-examination obligation within the subject "Methodology of psychological research" at the Faculty of Philosophy, University of Niš, Department of Psychology. The planned sample included 100 participants as criterion for the minimum number of respondents for the purposes of the mentioned subject. 119 participants took part in this research: 75 females and 44 males, aged 18 to 70 (M=27.66; SD=11.97). All participants were of Serbian nationality, except for one who was Romani. All participants participated in the research voluntarily.

Instruments

Operationalization of the fear of COVID-19 was achieved through the ***Fear of Covid-19 Scale (S-PACQ-19 (Jovančević & Milićević, 2021))***. The scale consists of seven items in a five-point Likert-type format designed to measure Fear of COVID-19 in individuals. Mean score was used for the analysis. The potential range of scores ranges from one to five. Three out of seven items are related to the fear of infection (*1 (I am not afraid of this at all) – 2 – 3 – 4 – 5 (I am very afraid of this)*) and two are related to fear for the future (*1 (I am not afraid of this at all) – 2 – 3 – 4 – 5 (I am very afraid of this)*), while one each is related to the fear of lack of food (*1 (I am not afraid of this at all) – 2 – 3 – 4 – 5 (I am very afraid of this)*) and the frequency of thinking about COVID-19 (*1 (Very rarely) – 2 – 3 – 4 – 5 (Very often)*). A high score on the scale represents a high level of Fear of COVID-19 and a low score represents a low level of Fear of COVID-19. There is no explicit evidence of the validity of a scale. The scale was constructed by Professor Nebojša Milićević and assistant Ana Jovančević at the Faculty of Philosophy in Niš, Serbia, and used for the first time for the current study. We are aware of the limitations of using a scale that does not have its validity reported, so for future research our recommendation would be to investigate the reliability and validity of this scale.

Operationalization of vaccination motivation was achieved through the ***Vaccination Motivation Scale (VA-COVID 19 (Đorić, Milićević, & Jovančević, 2021))***. The scale consists of seven items designed to measure Vaccination against COVID-19 motivation in individuals, but not all items are structured the same. Two out of seven are a Closed-Ended Question form (Applying for immunization (yes-no); Selection of a specific vaccine; while the rest are in a five-point Likert-type format (Reason for Vaccine Preference (*1 (not at all) –*

2 (a little) – 3 (moderately) – 4 (a lot) – 5 (very much)); Level of willingness to be vaccinated (*1 (I do not want to get vaccinated at all – 2 – 3 – 4 – 5 (I really want to get vaccinated)*); Private procurement of vaccine (*1 (I do not want to get vaccinated at all – 2 – 3 – 4 – 5 (I really want to get vaccinated)*); Reason to be vaccinated (*1 (completely incorrect) – 2 (partially incorrect) – 3 (neutral) – 4 (partially correct) – 5 (completely correct)*); Reason not to be vaccinated (*1 (completely incorrect) – 2 (partially incorrect) – 3 (neutral) – 4 (partially correct) – 5 (completely correct))*). Five out of seven items refer to motivation for vaccination, one to reasons to be vaccinated, and one to reasons not to be vaccinated. High scores on this scale represent high levels of Vaccination against COVID-19 motivation and low scores represent low levels of Vaccination against COVID-19 motivation. This scale is a continuation to the previous scale, so the same limitations and recommendations apply for this scale. Mean score was used for the analysis. The potential range of scores ranges from one to five. Each of these variables represents one item, and every item represents one specific criterion within Motivation for vaccination. The structure of the instrument resulted in varying formats for different items. Additionally, the content of these items made it impractical to treat them differently from self-contained criteria within the variable 'Motivation for vaccination'. No composite score from the VA-COVID 19 was calculated as the measure of motivation for vaccination. The reason for focusing only on Level of willingness to be vaccinated as the criterion is that it is unnecessary to show the results of every possible linear regression analysis, and the chosen criterion is seen as the best representative of Motivation for vaccination.

Operationalization of personality traits was achieved through use of the ***Personality trait questionnaire (Big Five Inventory-10 (BFI-10), Adapted from Rammstedt, B. & John, OP (2007))***. The Big Five Inventory-10 (BFI-10) scale was adapted from the original Big Five Inventory (BFI) developed by Rammstedt and John (2007). The BFI-10 is a shortened version of the BFI, consisting of 10 items designed to assess the five personality traits of the Five-Factor Model (FFM): extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. The scale employs a 5-point Likert response format, with responses ranging from 1 = Disagree strongly to 5 = Agree strongly. The 10-item scale is divided into five subscales, each of which is responsible for measuring the expression of one of the five main personality traits (E, A, C, N, O). Results from multiple samples and for two languages, namely English and German, suggest that, given its brevity, the BFI-10 possesses acceptable psychometric properties (Rammstedt & John, 2007). However, there were substantial losses in comparison to the full-scale BFI. Overall, results indicate that the BFI-10 scales retain significant levels of reliability and validity (Rammstedt & John, 2007). Mean scores were used for the analysis. The potential range of scores is from one to five.

Data analysis method

Linear regression analysis was applied to assess the contribution of Fear of COVID-19 and personality traits as predictors of motivation for vaccination, represented in the current study by the single item from the VA-COVID-19: Level of willingness to be vaccinated.

Procedure

The survey was conducted in April 2021. Participants took between 30-40 minutes to complete the questionnaire. The participants got to know about the study directly from the researchers who sent them a link to the questionnaire. The participants were informed that the

questionnaire in front of them was about their thoughts, feelings, attitudes and experiences during the pandemic, but also about the measures taken to suppress the pandemic, as well as regarding vaccines. It was emphasised that the research is anonymous and that they could withdraw from the research at any time and that the collected data will be used for scientific research purposes. Participants were instructed that they should answer questions from the questionnaire based on their experiences related to this pandemic. They were surveyed individually; everyone received a questionnaire for themselves. They answered using their computers or mobile phones.

RESULTS

We obtained the results by implementing the linear regression analysis method. Unstandardized (B) and standardised (β) coefficients, correlation coefficient between predictor and criterion (R), percentage of explained variance of criterion (R Square), degrees of freedom (df) and statistical significance were used. A statistical significance value below the critical level of 0.05 is taken as a statistically significant value.

Intercorrelations between all variables used in this study, including Fear of COVID-19, Personality traits and Level of willingness to be vaccinated, are shown in Table 1.

Table 1. Intercorrelations between fear of COVID-19, personality traits and level of willingness to be vaccinated
*$p < .05$; **$p < .01$

Variable	Level of willingness to be vaccinated	Fear of infection	Fear of lack of food	Fear for the future	Frequency of thinking about COVID-19	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Level of willingness to be vaccinated	-									
Fear of infection	**.285****	-								
Fear of lack of food	**.259****	**.239****	-							
Fear for the future	**.281****	**.479****	**.421****	-						
Frequency of thinking about COVID-19	**.424****	**.421****	**.393****	**.401****	-					
Extraversion	.062	-.015	-.110	-.037	-.121	-				
Agreeableness	.087	-.018	-.036	-.029	.077	.092	-			
Conscientiousness	.028	-.015	-.055	-.063	-.063	**.215***	.108	-		
Neuroticism	**.246****	.156	.105	.112	.171	-.106	-.070	**-.180***	-	
Openness	.084	.029	.042	**.218***	.042	-.131	-.098	-.144	-.173	-

As seen in Table 1, all aspects of fear of COVID-19 are mutually in correlation and all four of them are positively correlated with level of willingness to be vaccinated. Meanwhile, conscientiousness correlates with extraversion and neuroticism, and openness correlates with fear for the future. Level of willingness correlates only with neuroticism between personality traits. All correlations are low to moderate.

The following model (Model 1) with all four aspects of Fear of COVID-19 was subjected to regression analysis with Level of willingness to be vaccinated being the criterion. The correlation coefficient between the model and criterion is .453, and the percentage of explained variance is .205 (20.5%).

Table 2 shows the results of a linear regression analysis between four aspects of Fear of COVID-19 as predictors and Level of willingness to be vaccinated as criterion. Unstandardized and standardised coefficients, as well as the statistical significance values, are shown in Table 2.

Table 2. Unstandardized and standardised coefficients for Model 1

	Unstandardized B coefficient	*Standardised β coefficient*	*p*
Fear of infection	**.135**	**.096**	**.338**
Fear of lack of food	**.095**	**.078**	**.416**
Fear for the future	**.082**	**.072**	**.486**
Frequency of thinking about COVID-19	**.344**	**.325**	**.001****

***p* < .01

The model is statistically significant (p < .001), but only Frequency of thinking about COVID-19 is a statistically significant predictor of Level of willingness to be vaccinated (*p* = .001).

The following model (Model 2) with all five Personality traits of the Five‑Factor Model was subjected to regression analysis with Level of willingness to be vaccinated being the criterion. The correlation coefficient between the model and criteria is .327, and the percentage of explained variance is .107 (10.7%).

Table 3 shows the results of a linear regression analysis between five personality traits as predictors and Level of willingness to be vaccinated as criterion. Unstandardized and standardised coefficients, as well as the statistical significance values, are shown in Table 3.

Table 3. Unstandardized and standardised coefficients for Model 2

	Unstandardized coefficient *B*	*Standardised coefficient* *β*	*p*
Extraversion	**.186**	**.090**	**.328**
Agreeableness	**.173**	**.108**	**.232**

Conscientiousness	**.121**	**.077**	**.414**
Neuroticism	**.420**	**.307**	**.001****
Openness	**.243**	**.170**	**.069**

**$p < .01$

The model is statistically significant ($p = .024$), and only Neuroticism is a statistically significant predictor of Level of willingness to be vaccinated ($p = .001$).

DISCUSSION

The findings of our research show that the general hypothesis is confirmed. Fear of COVID-19 proved to be a statistically significant predictor of level of willingness to be vaccinated, and, out of five main personality traits, neuroticism proved to be a statistically significant predictor of level of willingness to be vaccinated. Between all four aspects of Fear of COVID-19, only frequency of thinking about COVID-19 proved to be a statistically significant predictor of level of willingness to be vaccinated, while fear of infection, fear of lack of food and fear for the future were not statistically significant predictors of level of willingness to be vaccinated. Based on results, we can say that the motivation for vaccination can be predicted based on the fear of COVID-19, specifically based on frequency of thinking about COVID-19. Our assumption is that the fear of COVID-19 proved to be a good predictor because fear, as a natural reaction to a dangerous situation, is the most common emotion associated with this pandemic and this virus, and as such represents one of the most important factors in the decision to get vaccinated. Frequency of thinking about COVID-19 is in positive correlation with other aspects of fear of COVID-19 and based on that we can say that frequency of thinking about COVID-19 is probably related to increased basic fear of COVID-19 and it seems that it is related to pressure on people to feel a certain level of willingness to be vaccinated.

On the other hand, as for the specific hypotheses related to personality traits, only neuroticism proved to be a statistically significant predictor of level of willingness to be vaccinated, while extraversion, agreeableness, conscientiousness and openness are not statistically significant predictors of level of willingness to be vaccinated. Based on results, we can say that the motivation for vaccination can be predicted based on only one personality trait, neuroticism. But, we cannot say this with such certainty because the correlation is weak. Neuroticism is a statistically significant predictor of the level of willingness to be vaccinated, which is the most representative personality component of motivation for vaccination. The reason for this could be that high levels of internal tension, stress and nervousness considering the pandemic affects the level of willingness to get the vaccine or not. Different reactions towards getting vaccinated are possible considering the different views that people hold about the vaccines. Our view is that high stress can influence a person to get the vaccine as soon as possible, or to avoid the vaccine as much as possible. Except for neuroticism, it appears that the current findings provide no objective grounds on which to conclude that specific personality types share an equal motivation for or level of willingness to be vaccinated. Based on neuroticism it is possible to predict the level of willingness to be vaccinated.

Similar results in other research have shown that increased fear of COVID-19 predicts vaccination willingness 14 months later (Mertens, Lodder, Smeets, & Duijndam, 2022).

We would like to mention that this research could have some flaws, mostly because of the instruments used. As firstly planned, the objective was to determine whether fear of COVID-19 and main personality traits predict motivation for vaccination but, due to the structure of the instrument (S-PASQ-19), we were directed to use level of willingness as a criterion.

Our research provides an answer to the question of whether the level of willingness to be vaccinated can be predicted based on the fear of COVID-19 and the main personality traits. The answer is that based on the fear of COVID-19 it can, specifically based on frequency of thinking about COVID-19, and based on the specific personality trait of neuroticism.

This research could be applied in psychotherapy, clinical psychology and counselling psychology, because it could help individuals with high levels of COVID-19 related fear. We are delighted to have contributed to a deeper understanding of the emerging situation through our research. Our findings offer a fresh perspective that could aid in addressing various challenges, particularly those arising from pandemic-related fears and neurotic tendencies. Furthermore, we believe our work can also assist other researchers investigating this issue. We can say that the goal of our research has been achieved.

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MOTOR BEHAVIOUR
& SPORTS PSYCHOLOGY

UDC: 796.4:159.9

PERFECTIONISM IN SPORTS: FRIEND OR FOE? THE RELATION OF PERFECTIONISM AND COMPETITIVE ANXIETY IN SERBIAN ATHLETES

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Abstract. In recent years, perfectionism has been viewed as a multidimensional construct that consists of adaptive or maladaptive perfectionism, which affects cognitive, emotional, motivational, and athletic outcomes in sports. The aim of this research is to examine the relationship between perfectionism and competitive anxiety in a sample of Serbian athletes (*N*= 90, 42 female), who train collective and individual sports at professional (*N*= 24), semi-professional (*N*= 22) and recreational (*N*= 44) level. Participants ages ranged from 18 to 37 years (M = 22.28, SD = 3.70). To measure perfectionism in sport, two subscales of the Multidimensional Inventory of Perfectionism in Sport (Madigan, 2016) were used: Striving for perfection (SP) and Negative reactions to imperfection (NRI), while competitive anxiety as a personality trait was measured using three subscales of the questionnaire The Sport Anxiety Scale-2 (Smoll et al., 2006): Somatic anxiety (SA), Worry (W), and Cognitive disruption (CD). Predictive model consisting of SP, NRI was statistically significant for Worry F(2,89)=9.39, p=.000, R2=.117 with SP (ß=-.304, p=.035) and NRI (ß=.587, p=.001) as significant predictors; and Cognitive disruption F(2,89)=6.42, p=.003, R2=.129 with SP (ß=-.300, p=.043) and NRI (ß=.512, p=.001) as significant predictors. The results of ANOVA show there are no statistically significant differences in perfectionism and competitive anxiety between athletes of different level of participation. Gender differences were obtained in SA (t(2, 88)=-3.072, p=.003), female athletes show higher levels of somatic anxiety (M=10.3, SD=3.73) compare to male athletes (M=8.15, SD=2.80); W (t(2, 88)=-3.896, p=.000), female athletes show higher levels of worry (M=11.93, SD=4.04) than male athletes (M=8.96, SD=3.07) and CD (t(2, 88) =-2.176, p=.032) where female athletes achieve higher score on cognitive disruption (M=8.56, SD=2.27) than male athletes (M=7.51, SD=2.29). Obtained results are in line with previous research - adaptive perfectionism can be a preventive factor, and maladaptive perfectionism a risk factor in developing competitive anxiety.

Keywords: maladaptive perfectionism, adaptive perfectionism, competitive anxiety (somatic anxiety, worry, cognitive disruption), athletes (professional, semi-professional, recreational)

INTRODUCTION

Perfectionism and competitive anxiety are closely related constructs that have been the focus of much research of sport psychology in recent years, even though term perfectionism originates from clinical and counselling literature. In initial stages to understand this construct, there was no uniform perspective or definition. Over time,

understanding of perfectionism has begun to converge on a small set of features including: a focus on exceedingly high personal standards and accompanying irrational beliefs or attitudes (Hill, 2016). Flett and Hewitt (2002) define perfectionism as a personal characteristic which reflects in striving for flawlessness and setting very high standards for performance, with tendencies for overly critical evaluations.

Early research saw perfectionism as an undesirable construct, a sign of psychological maladjustment, often mental disorder (Pacht, 1984). During the 1980s perfectionism was seen either as normal (a realistic standard, one can be less precise in certain situations and derive pleasure from painstaking labour) or as neurotic (unreachable level of performance followed by experience of efforts that are unsatisfactory and rigidity in high standards set) (Hamachek, 1978).

During the 1990s, a new view on perfectionism emerged - perfectionism as a multidimensional construct. Researchers were able to differentiate two major dimensions of perfectionism (Stoeber & Otto, 2006): a dimension which has been described as positive, healthy, and adaptive, and a dimension which has been described as neurotic, unhealthy, or maladaptive. The first dimension, perfectionistic striving, is characterised by having high personal standards and a drive to achieve them, but without the negative self-evaluation and self-criticism. The second one, perfectionistic concerns, captures those aspects associated with concerns over making mistakes, fear of negative evaluation by others, feelings of discrepancy between one's expectations and performance, and negative reactions to imperfection. These two dimensions are often in high positive correlation (Stoeber, 2011). Individuals who have high levels of perfectionistic strivings also have high levels of perfectionistic concerns. Studies have found that individuals who score high on measures of adaptive perfectionism also tend to score high on measures of maladaptive perfectionism. This suggests that individuals who possess adaptive perfectionism traits, such as high personal standards and a drive to achieve them, may also possess maladaptive perfectionism traits, such as negative self-evaluation and self-criticism. It is important to note that the correlation of these two dimensions with other variables varies greatly. Perfectionistic concerns are positively correlated with constructs such as negative affect, maladaptive coping, and mental disorders (depression), while perfectionistic striving shows positive correlation with positive affect, conscientiousness, and some indicators of good psychological adaptation (Stoeber, 2011).

Perfectionism and sports

Prior understandings on the role of perfectionism in sports also indicate that it has a maladaptive function and dysfunction (Flett, & Hewitt, 2005). Flett and Hewitt point to the "perfectionistic paradox" a term they coined to explain that where perfectionism is needed (e.g., sports to achieve top results) it can become harmful to the individual and their result, not leading to the expected achievement. Stoeber (2011) states that the reason for these findings is the lack of control of these two dimensions in research. This author presented 16 studies, concerning the relationship between perfectionistic strivings and perfectionistic concerns with adaptive and maladaptive variables. The findings indicate that perfectionistic concern is associated with maladaptive motivation (fear of failure and ego motivation) and certain emotions (negative affect, anxiety), but not associated with sports performance itself. On the other hand, perfectionistic striving positively correlates with intrinsic motivation (mastery of the skill), self-confidence, and negatively correlates with extrinsic motivation and cognitive anxiety. Gotwals and colleagues (2012) came to similar results regarding the relationship between perfectionistic concerns and perfectionistic strivings with other

variables. These findings indicate that perfectionistic concern is consistently maladaptive, while perfectionistic striving is adaptive. A more recent meta-analytic study (Hill et al., 2018) highlights a moderate positive correlation between perfectionistic striving and task orientation, perceived athletic ability and intrinsic motivation. Perfectionistic concern positively correlates with performance avoidance goal, mastery avoidance goal, amotivation, introjected and external motivation, as well as fear of failure.

According to available literature that examined gender differences in perfectionism in athletes are somewhat rare and results are not consistent. Some studies found that male athletes have higher levels of adaptive perfectionism (e.g., Anshel, Kim, & Henry, 2009) and maladaptive perfectionism (e.g., Ahmed et al., 2021), while other studies found no significant differences in neither dimension (Anshel & Eom, 2002; Greblo Jurakic, Baric, & Erpič, 2015).

On the other hand, some studies found that athletes of different sport levels have different levels of perfectionism. Professional athletes tend to have higher levels of striving for perfection and negative reactions to imperfections than recreational athletes (e.g., Mehrbakhsh Markhali et al, 2019; Rasquinha, Dunn, & Causgrove Dunn, 2014). These differences can be observed as a result of the competitive sport environment which develops striving for perfection and why professional athletes are more focused on achieving high levels of performance and have higher personal standards.

Perfectionism and competitive anxiety

In sport competitions, athletes can win or lose by a millimetre, a second or because of an irregular movement. The line between winning and losing is thin. Meaning, often near perfect performance leads to success. Thus, there is no surprise in finding that perfectionism is a common characteristic in competitive athletes (Dunn, Gotwals, Causgrove Dunn, 2005). Previous research has shown that individuals who score high on measures of perfectionism tend to have a greater likelihood of experiencing competitive anxiety (e.g., Correia, Rosado, & Serpa, 2018; De Maria et al, 2021; Stoeber, Otto, Pescheck, Becker, & Stoll, 2007; Waleriańczyk et al., 2022). This is because perfectionists place a great deal of pressure on themselves to perform well and meet their own high standards, which can lead to feelings of anxiety in competitive situations (Stoeber & Otto, 2006). Additionally, perfectionists may be more likely to experience anxiety in competitive situations because they are more likely to compare themselves to others and doubt their own abilities. Competitive trait anxiety can be defined as a type of performance anxiety that occurs in competitive situations. It is a psychological state, based on multidimensional anxiety theory (Martens et al., 1990) that assesses both somatic and cognitive symptoms of sport performance anxiety. In simple terms, it is characterised by feelings of nervousness, worry, and apprehension in anticipation of or during a competitive event. Somatic anxiety evaluates the physiological elements of hyper-activation, such as muscle tension or stomach uneasiness; the cognitive subscale of worry, which assess concerns associated with poor performance; and concentration disruption, which detects difficulties in focusing on relevant aspects of the competitive activity.

Research has suggested that there may be a relationship between competitive anxiety and certain socio-demographic variables. However, the relationship is complex and not fully understood. As far as gender is concerned, studies have found that male and female athletes tend to have similar levels of competitive anxiety, although some studies suggest that females may have slightly higher levels (Martens et al., 1990). However, this difference may be since females tend to have more negative thoughts and self-doubts which may increase their

competitive anxiety (Grossbard, Smith, Smoll, & Cumming, 2009; Thatcher, Thatcher, & Dorling, 2004). When level of sport participation is in question, studies have found that professional athletes tend to have higher levels of competitive anxiety than recreational athletes (Mehrbakhsh Markhali et al., 2019) which can be related to the fact that professional athletes are under more pressure to perform well and have more at stake in competitions (Stoeber & Otto, 2006).

Present study

The present study aims to further investigate the relationship between perfectionism and competitive anxiety in athletes of different levels of participation. The relationship between perfectionism and competitive anxiety during competitions has been found to have two distinct facets, namely striving for perfection and negative reactions to imperfection. The former represents the core element of the positive dimension of perfectionism (Stoeber & Otto, 2006) and the latter has been found to be closely related to concern over mistakes and maladaptive perfectionism (Frost & Henderson, 1991). Previous research has found that overall perfectionism, which combines striving for perfection and negative reactions to imperfection, is positively correlated with competitive anxiety (e.g., Correia, Rosado, & Serpa, 2018; De Maria et al, 2021; Stoeber, Otto, Pescheck, Becker, & Stoll, 2007; Waleriańczyk et al., 2022). As different studies have suggested, we expected that there may be gender differences and differences between athletes at different levels of participation in terms of two dimensions of perfectionism: striving for perfection, negative reactions to imperfection, as well as somatic anxiety, competitive anxiety.

METHOD

Sample and procedure

A sample consisted of 90 Serbian athletes (43 female athletes) who train collective (N= 68) and individual sports (N= 22) at professional (N= 24), semi-professional (N= 22) and recreational (N= 44) levels. Participants' ages ranged from 18 to 37 years (M= 22.28, SD= 3.70). Most of the athletes live in city areas (83%), around 68% play football, basketball, or volleyball, 47% of them are training for more than ten years and 67% are currently students.

Data was collected by athletes through an online survey during the beginning of 2022, and participants gave their consent to participate in the research at the beginning of the online survey.

Variables and measures

Multidimensional Inventory of Perfectionism in Sport (Madigan, 2016). This inventory assesses four components of perfectionism: parental pressure to be perfect, coach pressure to be perfect, striving for perfection and negative reactions to imperfection. In this study out of 26 only 10 items were used, from two components: striving for perfection (5 items: e.g., “I strive to be as perfect as possible”, α=.962 in our sample) and negative reactions to imperfection (5 items, e.g., “I feel extremely stressed if everything does not go perfectly”, α=.914 in our sample). Respondents gave their answers on a seven-grade scale.

The Sport Anxiety Scale-2 (Smith et al., 2006). This scale assesses the competitive trait anxiety experienced by athletes before or during competition. The scale consists of 15

items and 3 subscales: somatic anxiety (5 items: e.g., “I feel tense in my stomach”, α=.874 in our sample), worry (5 items: e.g., “I worry that I will not play well”, α=.875 in our sample) and cognitive disruption (5 items: e.g., “I lose focus on the game”, α=.785 in our sample). Respondents gave their answer on a five-grade Likert scale.

Athlete Socio-demographic Questionnaire. This questionnaire was designed for the purpose of this research and contains questions about age, gender, type of sport, years of being in a sport, level of participation. Recreational level of participation refers to participation in sports or physical activity for leisure, fun, and personal enjoyment without any significant monetary rewards, or competing in sports in an organised way. Semi-elite athletes are those whose highest level of participation is below the top standard possible in their sport (e.g., in talent development programs, competing at second-tier standard or below, etc.); who participate in sports at a competitive level but do not receive significant monetary compensation for their efforts. Professional level of participation refers to individuals who participate in sports as a primary source of income and compete at the highest level and have experienced some (infrequent) success at that standard (e.g., winning an event or a medal) (Swann et al., 2015).

The questionnaire was mostly in the form of close ended questions.

RESULTS

First goal of the study was to determine gender differences in striving for perfection and negative reactions to imperfection, as well as subscales of competitive anxiety via t-test for independent samples. Furthermore, to determine if athletes differ in named variables regarding the level of sport participation ANOVA analysis was conducted. To determine if perfectionism represents a significant predictor of competitive anxiety, regression analysis was conducted.

Table 1. Correlations between three dimensions of cognitive anxiety and two dimensions of perfectionism

Variable	M	SD	1	2	3	4
Somatic Anxiety	9.17	3.44				
Worry	10.37	3.85	.659**			
Cognitive disruption	8.01	2.33	.412**	.557**		
Striving for perfection	19.01	7.88	.083	.124	.073	
Negative reaction to imperfection	14.03	6.71	.189	.294**	.306**	.728**

**. Correlation is significant at the 0.01 level (2-tailed).

As it can be seen from Table 1, subscales of competitive anxiety are significantly and positively correlated, as well as both dimensions of perfectionism. Positive correlation was obtained between negative reaction to imperfection and worry and cognitive disruption.

Table 2. Gender differences in perfectionism and competitive anxiety

	Gender	N	Mean	Std. Deviation	Std. Error Mean	t	p
Somatic Anxiety	Male	47	8.15	2.80	.41	-3.072	**.003**
	Female	43	10.30	3.73	.57		
Worry	Male	47	8.96	3.07	.44	-3.896	**.000**
	Female	43	11.93	4.05	.62		
Cognitive Disruption	Male	47	7.51	2.29	.33	-2.176	**.032**
	Female	43	8.56	2.27	.35		
Striving for perfection	Male	47	18.02	8.05	1.17	-1.254	.213
	Female	43	20.09	7.62	1.16		
Negative reaction to imperfection	Male	47	13.06	6.57	.96	-1.439	.154
	Female	43	15.09	6.78	1.03		

As can be seen from Table 2, female athletes achieve statistically higher scores on somatic anxiety, worry, and cognitive disruption than male athletes. In terms of perfectionism, there are no significant gender differences, but can be observed that female athletes achieve higher scores on both dimensions of perfectionism.

Table 3. Differences in perfectionism and competitive anxiety in line with the level of sport participation

		N	Mean	Std. Deviation	Std. Error	F	p
Somatic Anxiety	professional	24	9.37	3.20	.65	.266	.767
	semi-professional	22	9.50	3.51	.74		
	recreational	44	8.91	3.57	.53		
Worry	professional	24	11.66	4.29	.87	1.91	.155
	semi-professional	22	10.09	3.59	.76		
	recreational	44	9.82	3.64	.54		
Cognitive Disruption	professional	24	7.75	2.11	.43	.452	.638
	semi-professional	22	7.81	2.61	.55		
	recreational	44	8.25	2.32	.35		

Striving for perfection	professional	24	19.12	8.54	1.74	.699	.500
	semi-professional	22	20.59	7.66	1.63		
	recreational	44	18.15	7.65	1.15		
Negative reaction to imperfection	professional	24	14.16	7.44	1.52	.015	.986
	semi-professional	22	14.14	5.65	1.20		
	recreational	44	13.90	6.93	1.04		

Athletes of different sport level participation don't differ in the level of perfectionism and competitive anxiety (Table 3). Athletes who participate in sports at recreational level obtained lower scores on somatic anxiety and worry, and both dimensions of perfectionism, but have slightly higher scores on variable cognitive disruption. Professional athletes achieve higher scores on worry, and negative reactions to imperfection, while athletes on semi-professional level have higher scores on somatic anxiety and striving for perfectionism.

To determine if perfectionism represents a significant predictor of competitive anxiety, regression analysis was conducted with subscale of competitive anxiety as criteria variables, and two dimensions of perfectionism as predictors.

Table 4. Results of regression analysis

	Somatic Anxiety[a]			Worry[b]			Cognitive Disruption[c]		
	β	t	p	β	t	p	β	t	p
Striving for perfection	-.115	-.754	.453	**-.304**	**-2.143**	**.035**	**-.300**	**-2.053**	**.043**
Negative reaction to imperfection	.273	1.785	.078	**.587**	**4.142**	**.000**	**.512**	**3.508**	**.001**

[a] $F_{(2,89)}$=1.19, p=.154, R^2=.042
[b] $F_{(2,89)}$=9.39, p=.000, R^2=.117
[c] $F_{(2,89)}$=6.42, p=.003, R^2=.129

Both dimensions of perfectionism have a significant predictive role in worry and cognitive disruption (striving for perfectionism is in negative relation and dimension negative reaction to imperfection is in positive relation).

DISCUSSION AND CONCLUSIONS

Understanding perfectionism as a multidimensional construct that can have both positive and negative outcomes in sports has gained the attention of researchers in the last two decades. One of the outcomes that further affect sports achievement is competitive anxiety. In this study we define competitive anxiety as a multidimensional construct in line with Martens multidimensional anxiety theory (Martens et al., 1990). Previous research has shown that maladaptive perfectionism is related to higher levels of worrying about making mistakes and concerns about performance in sports, as well as competitive anxiety (exp. Correia, Rosado, & Serpa, 2018; De Maria et al, 2021; Stoeber, Otto, Pescheck, Becker, &

Stoll, 2007; Waleriańczyk et al., 2022). Therefore, the aim of the present study was to examine the relationship between perfectionism and competitive anxiety in Serbian athletes as well as if there are differences in athlete's level of competitive anxiety and perfectionism regarding gender and the level of sport participation.

The obtained results are in line with previous research (exp. Correia, Rosado, & Serpa, 2018; De Maria et al, 2021; Stoeber, Otto, Pescheck, Becker, & Stoll, 2007; Waleriańczyk et al., 2022). Perfectionism, observed through two dimensions – striving for perfection (adaptive perfectionism) and negative reaction to imperfection (maladaptive perfectionism) – represents a significant predictor of competitive anxiety in Serbian athletes. That is, both maladaptive and adaptive perfectionism explain 11.7% of subscale Worry, and 12.9% of subscale Cognitive disruption, and are significant individual predictors of those two subscales. Athletes who have maladaptive perfectionism, who are prone to negatively react to imperfection (high criticism toward self if they are not perfect during competition, low frustration tolerance, dismissive of one's own achievement if it is not perfect…). The same athletes are at risk to develop cognitive anxiety – worry about the outcome, disappointing others, not playing well, about making a mistake, as well as cognitive disruption that refers to difficulty in maintaining focus during the game. These athletes see perfection as a "must", something that defines them in a good or a bad way, where mistakes are not a part of the learning process, but the outcome of imperfection.

On the other hand, adaptive perfectionism is negatively correlated with competitive anxiety. Athletes who strive for perfection in a way that they are pushing themselves to be the best as a challenge but not as a pressure, will have lower competitive anxiety. These athletes see perfection as giving your best, as a motivation toward a goal, and not as a "trap" for making a mistake.

Even though some research found correlation between somatic anxiety and perfectionism (e.g., Freire et al., 2018) in our study adaptive and maladaptive perfectionism were not significant predictors of somatic anxiety (Table 4). These results may suggest mediating the role of perfectionism or other two subscales of competitive anxiety on somatic anxiety. If we look at correlations between subscales Worry, Cognitive Disruption and Somatic anxiety, we can see that they are positively correlated. Having in mind that somatic anxiety is physiological anxiety, it could be possible that perfectionism has a greater impact on cognitive aspects of anxiety, which further affects physiological responses (Blatt & Zuroff, 2005; Flett, et al, 1998; Hewitt, Flett & Mosher, 1994). Further research is needed to examine those relations.

Prior research has suggested that there are differences between athletes at different levels of participation in terms of striving for perfection, negative reactions to imperfection, and competitive anxiety (e.g., Mehrbakhsh Markhali et al, 2019). The results of our study however showed that there are no statistically significant differences in striving for perfection, negative reaction to imperfection, somatic anxiety, and cognitive disruption between athletes of different levels of participation. These findings could indicate that athletes at different levels of participation have similar levels of striving for perfection and negative reactions to imperfection but manage their competitive anxiety differently. However, professional athletes score slightly higher scores in worry, and both striving for perfection and negative reaction to imperfection then recreational athletes, which is in line with some studies (Mehrbakhsh Markhali et al, 2019). Even though obtained differences were not statistically significant, they might suggest that the pressure and expectations associated with elite-level competition may lead to increased levels of worry, due to higher pressure to achieve success and maladaptive perfectionism. It's possible that the intensity of the competition and pressure to maintain their elite status may contribute to these elevated levels

of worry. It's also possible that professional athletes may have a different focus of worry, for example, worry about losing their status, injury or not being able to perform well in a certain competition (Gould et al., 1993). Other factors such as personality, coping strategies and past experiences can also play a role in competitive anxiety and perfectionism and these factors can interact differently among athletes of different levels of participation (Madigan et al., 2018; Reigal et al., 2019).

In terms of socio-demographic variables, obtained results show that female athletes have statistically significant higher levels of competitive anxiety, and not statistically significant but higher levels of perfectionism (Table 1). This is in line with studies that have shown that female athletes tend to have higher levels of anxiety in general, and that it may be heightened in competitive situations (Hausenblas & Fallon, 2006). Female athletes may also face more societal pressure to be perfect and may experience more stress and negative self-evaluation when they make mistakes or fail to meet their own high standards. Additionally, female athletes may be more likely to internalise their emotions, which can increase anxiety (Nideffer, 1976). Even though some research show that male athletes have higher level of perfectionism (e.g., Anshel, Kim, & Henry, 2009; Ahmed et al., 2021), in our study those differences were not attained, and on contrary show that even though there are no significant differences, Serbian female athletes achieve slightly higher scores on both adaptive and maladaptive perfectionism. These results indicate the need for further research in both competitive anxiety and perfectionism in Serbian athletes with larger samples, consideration of factors like age, coaches' behaviour, personality traits, type of sports etc.

One of the limitations of this study is the small sample, and smaller number of athletes from individual sports. However, the athlete population is a specific population, and is not large in number, therefore this research can be seen as a relevant pilot study for learning more about perfectionism in sports and its correlation to emotional, motivational, behavioural, and cognitive outcomes in sports. Practical implication of the obtained results can be seen in educating athletes and coaches about adaptive and maladaptive perfectionism and management of competitive anxiety. By educating coaches about the difference between adaptive and maladaptive perfectionism (adaptive perfectionism refers to having high standards for oneself and striving for excellence, but also being able to accept mistakes and setbacks as part of the learning process; maladaptive perfectionism, on the other hand, is characterised by an excessive fear of failure, an inability to accept mistakes or imperfections, and a tendency to be overly self-critical) we can help create more task-oriented climate and healthy environment for athletes. Next, the coach could discuss how adaptive and maladaptive perfectionism can impact an athlete's performance and mental health with athletes and create a supportive climate. While adaptive perfectionism can motivate athletes to work hard and improve, maladaptive perfectionism can lead to anxiety, burnout, and decreased performance. It is important for athletes to recognize the signs of maladaptive perfectionism and work to shift their mindset to a more adaptive one. Finally, the coach could provide strategies for managing competitive anxiety. This could include techniques such as deep breathing, visualisation, and positive self-talk. The coach could also discuss the importance of having a pre-game routine and focusing on controllable factors, such as effort and attitude, rather than external factors like the outcome of the game. Overall, by educating coaches, and athletes about adaptive and maladaptive perfectionism and management of competitive anxiety, athletes can perform at their best while also maintaining their mental health and well-being.

Obtained results contribute to better understanding of the relation between perfectionism, more precisely between adaptive and maladaptive perfectionism and competitive anxiety in Serbian athletes and represent a valid basis for further research. In this

study we were oriented toward individual factors such as personal traits, but further research should consider social factors such as interpersonal relationships (coach-athletes, teammates, parent-athlete…), motivational climate, that can have both direct and indirect effect on both perfectionism and competitive anxiety.

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WORK, ORGANIZATION & MENTAL HEALTH

UDC: 159.944:331

WORK-FAMILY CONFLICT AND TURNOVER INTENTION: THE MEDIATING ROLE OF OPTIMISM

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Abstract. The current version of the Job Demands-Resources model (JD-R) proposes that high job demands lead to adverse health-related and organisational outcomes and that high resources lead to increased motivation and higher productivity. Personal resources (e.g., optimism) could act as a mediator between job demands and outcomes. However, the JD-R model has one limitation – ignoring non-work-related factors. Prior studies highlight that work-related and home-related factors influence health-related and organisational outcomes. Therefore, this study aimed to examine the relationships between work-family and family-work conflicts and employee turnover intention and to test the mediating role of optimism in these relationships. The sample consisted of 168 (54.8% female) employees. We used the Work-family Conflict Scale, Turnover Intention Scale and Optimism Scale. The mediation analysis results showed that the relationship between work-family conflict and turnover intention is entirely mediated by optimism, indicating that higher values of work-family conflict contribute to lower optimism, leading to higher turnover intention. The mediatory role of optimism is not determined in the relation between family-work conflict and turnover intention. The obtained findings have been considered in light of theoretical and practical importance.

Keywords: work-family conflict, family-work conflict, turnover intention, optimism, mediating effect

INTRODUCTION

Turnover intention is defined as an employee's voluntary intention to leave an organisation (Saks, 2006) and is widely regarded as the best predictor of actual turnover (e.g., Bertelli, 2007; Dalton et al., 1999; Lee & Whitford, 2007). Because of the organisation's high employee turnover rate, work planning is challenging, the workload is increased, and existing employees' motivation is harmed (e.g., Belete, 2018; Jha, 2009; Kaya & Abdioglu, 2010). Additionally, high costs are incurred for recruiting, selecting, and training new hires due to employee turnover (e.g., Belete, 2018; Hall, 1981; Jha, 2009; Jones, 2005). Employee turnover, in short, harms an organisation's efficiency, effectiveness, and overall performance (Seligman, 2011; Shaw, 2011). Therefore, understanding the determinants of turnover intention is essential for identifying intervention strategies to reduce turnover intentions.

The Job Demands-Resources (JD-R) model is a widely accepted theoretical model for explaining the dynamic of work-related outcomes, including employees' turnover intention (Demerouti et al., 2001; Schaufeli & Bakker, 2004). According to the JD-R model, the work environment's characteristics can be defined as job demands and job resources. Job demands are "physical, social, or organisational aspects of the job that necessitate sustained physical or mental effort and are thus associated with physiological and psychological costs" (Demerouti et al., 2001, p. 501). Job resources are “physical, social, or organisational aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job

demands and the associated physiological and psychological costs; (c) stimulate personal growth and development" (Demerouti et al., 2001, p. 501). The current version of the JD-R model proposes that high job demands lead to adverse health-related and organisational outcomes. In contrast, high job resources lead to increased motivation and higher productivity. Existing studies (e.g., Bakker et al., 2003; Bakker et al., 2004; Bakker et al., 2005; Demerouti et al., 2001; Hansen et al., 2009; Xanthopoulou et al., 2007) demonstrate that long-term excessive job demands lead to overtaxing, resulting in exhaustion and decreased job performance. On the other hand, job resources activate a motivational process that results in positive employee behaviour and job performance (Bakker & Demerouti, 2007; Demerouti et al., 2001).

Even though the JD-R model has received much empirical support in previous research, it has one limitation – it focuses on job demands as the primary source of outcomes while ignoring non-work-related factors. Prior studies (e.g., Netemeyer, Boles & McMurrian, 1996) highlight that work-related and home-related factors, such as work-family conflict, also influence health-related and other outcomes, so it is essential to consider both home and work demands within this model. Hence, the present study tries to fill this gap and generate insight into the effect of work-family conflict on turnover intention.

The fact that individuals have a limited amount of time and energy and that work and family compete with each other for these resources influenced the focus of researchers on studying the negative aspects of the relationship between the work and family domains - the conflict between work and family roles. Work-family conflict is defined as the experience of a mismatch of role demands from the work and family domains. It occurs when meeting demands from one part makes it difficult or impossible to meet needs from another (Greenhaus & Beutell, 1985). Work-family conflict, or conflict resulting from the disruptive impact of work on the family, and family-work conflict, or conflict resulting from the disruptive effect of family on work, are two distinct and separate constructs (Biron, 2005). These conflicts harm an individual's well-being and family, and organisational performance. They result in, at the individual level, dissatisfaction, anxiety, depression and poor health; at the family level, in increased interpersonal conflict, marital discontent, and divorce; while, at the organisational level, they contribute to low organisational commitment, work dissatisfaction, and employee turnover (Netemeyer, Boles & McMurrian, 1996). Finally, work-family conflicts can cause workers to consider leaving their profession, job, or organisation to resolve the conflict and reduce the current stress they are experiencing (Greenhaus, Parasuraman, & Collins, 2001).

Personal resources have recently been proposed to be integrated into the JD-R model because human behaviour can be explained by the interaction of personal and environmental factors (Schaufeli & Taris, 2014). Personal resources are "the psychological characteristics or aspects of the self that are generally associated with resiliency and that refer to the ability to control and impact one's environment successfully" (Schaufeli & Taris, 2014). This kind of resource functions similarly to job resources to improve personal growth and development (Schaufeli & Taris, 2014). Although personal resources can be integrated and significantly impact the JD-R model, Schaufeli (2017) argues that it is unclear exactly how they function. According to Schaufeli and Taris (2014), there are five places to consider personal resources in the JD-R model. They can be integrated as mediators of the relation between job characteristics and work-related outcomes, moderators of the association between job characteristics and work-related outcomes, "third variables" that can explain the link between the job characteristics and work-related outcomes, antecedents of job demands and job resources, or as any combination of these. Therefore, Schaufeli and Taris (2014) urged further study to gather more data to clarify where and how personal resources act.

Optimism is an example of a personal resource. Schaufeli and Taris (2014) perceive optimism as a crucial personal resource in the JD-R model. Optimism is the tendency to believe that one will generally experience good outcomes in life (Scheier et al., 2001). Optimism has been recognized as a fundamental component of individual adaptability (Hobfoll, 2002). Luthans (2002) asserts that optimism motivates people to put in more effort, feel happier, behave morally, and persevere through adversity. Prior studies showed that optimism negatively correlated with work-family conflict (e.g., Avey et al., 2011) and employee turnover intention (e.g., Siu, Cheng, & Liu, 2015).

Keeping all of this in mind, this study aimed to examine the mediating role of optimism in the relationships between work-family and family-work conflicts and employee turnover intention. The present study uses Hobfoll's (1989) conservation of resources (COR) theory as its theoretical framework that integrates the causal relationship between work-family and family-work conflicts, optimism, and turnover intention. According to the COR theory, individuals strive to acquire, accumulate and maintain those resources (e.g., material or psychological resources, energy) they value. When resources are lost or exhausted, a spiral of loss is initiated, stress occurs, and people enter a defensive mode to preserve the self, recover from resource losses, and restore well-being (Hobfoll, 2002). Using this premise of COR theory, it is conceivable to assume that work-family and family-work conflicts can arise because workers have insufficient resources available to attend to all their responsibilities. Their unsuccessful efforts may drain other resources, such as optimism, resulting in the intention to leave the job to restore well-being (Grandey & Cropanzano, 1999; Greenhaus, Parasuraman & Collins, 2001). In conclusion, by incorporating the assumptions of COR theory into the JD-R model, we hypothesised that optimism fully mediates the relationship between work-family and family-work conflicts and employee turnover intention. Specifically, work-family and family-work conflicts are negatively related to employees' optimism which, in turn, is positively associated with turnover intention.

The current study has three potential contributions to the literature. First, this study investigates the relationship between non-work-related factors, such as work-family conflicts, and work-related outcomes, such as turnover intention. As a result, it can broaden the JD-R model by including non-work-related factors as an antecedent of work-related outcomes. Second, the present study used the COR theory to investigate whether work-family conflicts decrease employees' personal resources, i.e., optimism, which leads to turnover intention. This study can therefore offer empirical support for the COR theory. Finally, this study can contribute to a better understanding of the mechanism of turnover intention and find a way to reduce turnover intentions in organisational practice.

METHOD

Participants and procedure

The sample consisted of 168 employees (45.2% female) from Bosnia and Herzegovina, ranging from 20 to 62 (M = 35.86, SD = 9.94) years of age. Employees from small and medium-sized businesses took part. In terms of occupations, 4.8% worked in banking, 8.3% in public administration, 26.8% in healthcare, 14.9% in education, 12.5% in information technology, 4.8% in trade, 6% in construction, 4.8% in gastronomy, and 17.3% in production. There were 83.3% subordinates, and 16.7% held supervisory positions. The job tenure ranged from 1 to 41 years (M = 10.44, SD = 8.46). Regarding educational background, 19% completed secondary education, 68.5.5% received a bachelor's degree, and 12.5% a master's degree. Regarding marital status, 52.4% are married.

The study was conducted in May and July 2021. Data were collected in organisations during working hours using a paper-and-pencil format, under the supervision of the researchers. The survey took about ten minutes to complete. The participants filled out the questionnaires in groups. Participation was anonymous and voluntary.

G*Power was used to calculate (A priori: Compute required sample size) for the indirect effect of the independent variables on the dependent variable through the mediator, resulting in a minimum sample size of 102 for the mediation model with two independent variables and one mediator, 80% power, and moderate correlations among variables. Therefore, our sample of 168 respondents was appropriate.

Instruments

Scale of Work-Family Conflict (Netemeyer, Boles & McMurrian, 1996). This 12-item scale includes six items that assess work-family conflict (WFC) (e.g., "*I get so tired at work that I don't have enough energy to do all the household chores*") and six items that assess family-work conflict (FWC) (e.g., "*I have to change plans and obligations at work because of family obligations*"). Participants answered on a 7-point Likert scale ranging from 1 = totally disagree to 7 = totally agree. The total score is calculated as the arithmetic means of the respondents' answers to all subscale items (theoretical range for each subscale from 1 to 7). A higher total score indicates a higher level of work-family and family-work conflict. For this study, Cronbach's alpha was .80 for work-family conflict and .90 for family-work conflict.

Optimism Scale (Bakker, 2014). This scale is part of the Personal Resources Scale and consists of four items. Participants answered on a 5-point Likert scale ranging from 1 = never to 5 = always. Example items include: *"I am always optimistic about my future"*. The total score is calculated as the arithmetic mean of the respondents' answers to all items (theoretical range from 1 to 4). For this study, Cronbach's alpha was .76.

Turnover Intention Scale (Popov, 2009). The scale consists of three items. Participants answered on a 5-point Likert scale ranging from 1 = never to 5 = always. Example items include: *"How often have you thought about leaving your current job in the last year?"*. The total score is calculated as the arithmetic mean of the respondents' answers to all items (theoretical range from 1 to 3). For this study, Cronbach's alpha was .90.

Demographic Questionnaire. The questionnaire included four questions about demographic characteristics such as gender, age, tenure and marital status.

Data analysis

Descriptive statistics and correlation analysis were used in data analysis, performing the statistical software SPSS for Windows, version 22.0. In addition, mediation analysis was used to determine whether work-family conflict and family-work conflict were related to turnover intention through optimism. Indirect effects were considered significant if the 95% bootstrap confidence interval (CI) did not include the value 0 ($p < 0.05$) (Preacher & Hayes, 2008). Mediation analysis was performed using Jamovi (version 1.2) GLM package (JAMM module).

RESULTS

Table 1 shows descriptive statistics and bivariate correlations. Measures of means and variability, skewness and kurtosis do not indicate significant deviations compared to a normal distribution (Tabachnick & Fidell, 2001).

Table 1. Descriptive statistics and correlations

Variables	M	SD	Sk	Ku	Correlations		
					WFC	FWC	OP
WFC	2.81	1.05	.03	-.18	-		
FWC	2.48	1.08	1.00	-.20	.33***	-	
OP	3.99	.76	-78	.63	-.38***	-.23**	-
TI	2.21	1.27	.70	-.73	.22**	.24**	-.47***

Note. WFC – Work-family conflict; FWC – Family-work conflict; OP – Optimism; TI – Turnover intention

*** $p < .001$, ** $p < .01$

As expected, the correlation analysis demonstrated a significant negative moderate association between optimism and turnover intention (r = -.47, p < .001). Work-family conflict and family-work conflict are in a significant positive weak association with turnover intention (r = .22, p < .01 and r = .24, p < .01, respectively). In addition, optimism is in a significant negative moderate correlation with work-family conflict (r = -.38, p < .001), while family-work conflict in a significant weak negative correlation with optimism (r = -.23, p < .01). Moreover, there is a significant positive moderate relationship between work-family conflict and family-work conflict (r = .33, p < .001).

The mediation analysis was used to test the mediation role of optimism in the relationship between work-family and family-work conflicts and turnover intention. Figure 1 presents the mediation model, work-family conflict and family-work conflict on turnover intention through optimism.

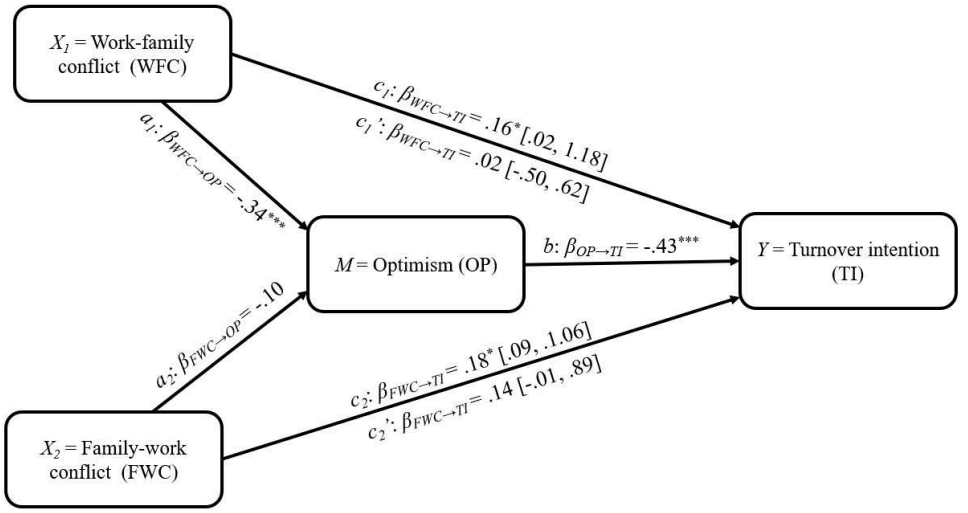

Figure 1. Standardised path coefficients for the mediation model, work-family conflict and family-work conflict on turnover intention through optimism.
Notes: ***$p < .001$; *$p < .05$; CIs were obtain using k = 5 000 bootstrapping samples

Findings (Table 2) based on 5000 bootstrapped samples (recommendation c. Hayes, 2013), showed that the work-family conflict and family-work conflict did not directly predicted turnover intention (B = .06, SE = .28, p = .833, 95% CI [-.50, .62] and B = .44, SE = .23, p = .055, 95% CI [-.01, .89], respectively). By introducing optimism as a mediator, we estimated a significant indirect effect in the case of work-family conflict (B = .54, SE = .15, 95% CI [.23, .84], z = 3.487, p < .001), which indicates that higher work-family conflict contributes to a lower feeling of optimism in employees, that in turn increase their turnover intention. However, we did not find a significant indirect effect of family-work conflict on turnover intention through optimism (B = .13, SE = .11, 95% CI [-.08, .34]).

Table 2. Indirect, direct and total effects of the mediation model, work-family conflict and family-work conflict on turnover intention through optimism

				95% CI				
Effect	Paths	B	SE	Lower	Upper	β	z	p
Indirect	WFC → OP → TI	.54	.15	.23	.84	.15	3.487	< .001
	FWC → OP → TI	.13	.11	-.08	.34	.04	1.214	.225
Component	WFC → OP	-.75	.17	-1.09	-.42	-.34	-4.407	< .001
	OP → TI	-.71	.12	-.96	-.47	-.43	-5.702	< .001
	FWC → OP	-.18	.14	-.46	.10	-.10	-1.242	.214
Direct	WFC → TI	.06	.28	-.50	.62	.02	.211	.833
	FWC → TI	.44	.23	-.01	.89	.14	1.922	.055
Total	WFC → TI	.60	.30	.02	1.18	.16	2.022	.043
	FWC → TI	.57	.25	.08	1.06	.18	2.265	.023

Note. WFC – Work-family conflict; FWC – Family-work conflict; OP – Optimism; TI – Turnover intention

DISCUSSION AND CONCLUSION

This study sought to expand the JDR model by examining the impact of non-work-related factors, such as work-family and family-work conflicts, on the work-related outcome, i.e., turnover intention. Furthermore, this study aimed to examine the mediation role of optimism, as a personal resource, in the relationship between work-family and family-work conflicts and turnover intention. Using COR theory, we hypothesised that optimism mediates the relationship between work-family and family-work conflicts and employee turnover intention.

The results of the correlation analysis indicated that work-family and family-work conflicts are in a positive correlation with employees' turnover intention. This finding is in line with previous studies (e.g., Arlee & Luk, 1996; Blanco-Donoso et al., 2021; Ghayyur & Jamal, 2012; Greenhaus, Parasuraman & Collins, 2001). In addition, results suggest significant negative correlations between optimism and work-family and family-work conflicts. Prior studies also showed that optimism negatively correlated with work-family and

family-work conflicts (e.g., Avey et al., 2011). Finally, significant negative correlations were found between optimism and turnover intention. These results are also consistent with earlier research (e.g., Liu et al., 2021; Siu, Cheng, & Liu, 2015).

As the main finding of this study, the mediation analysis results showed that the relationship between work-family conflict and turnover intention is entirely mediated by optimism. This finding has two significant theoretical implications. First, this finding supports the JD-R model's extension, i.e., the inclusion of non-work-related factors as antecedents of work-related outcomes in the model. Second, this finding is empirical evidence supporting the COR theory. According to the COR model, work-family conflict can arise because the worker has insufficient resources available to them to enable them to attend to all their responsibilities. Moreover, according to this model, the inadequacy of resources initiates a spiral of losses. In the end, when resources are exhausted, people enter a defensive mode to preserve the self, recover from resource losses, and restore well-being (Hobfoll, 2002). Our result indicates that higher values of work-family conflict contribute to lower optimism, which, in turn, leads to higher turnover intention. This finding confirms that insufficient resources drain other resources and that people become defensive to protect themselves, recover from resource losses, and restore well-being. So, that is empirical evidence in favour of the COR theory.

However, we did not find a significant indirect effect of family-work conflict on turnover intention through optimism nor a direct impact of family-work conflict on turnover intention. This result is in line with the results of some previous studies. For instance, Bakker et al. (2005) found that home characteristics, precisely home demands, were associated with job-related outcomes, such as work engagement and burnout. Still, these effects were weaker than the effects of job demand on the same outcomes. Similarly, Yucel (2019) found that work-family conflict, but not family-work conflict, is associated with lower job satisfaction and work engagement. This author assumes that because home demands originate in the family sphere, family-work conflict more affects non-work outcomes than work outcomes.

The results of the present study also have one practical implication. The finding that work-family conflict is an important premise that shapes employees' optimism and turnover intention indicates that the organisation's management should provide strategies for improving the work-life balance. This practice could positively affect employees' optimism and reduce their turnover intention to leave their jobs.

Although the study's findings suggest important insights, this study has limitations that must be addressed in future research. First, we used a convenient sample of participants. In addition, our sample size was small. Future research could concentrate on larger samples and other sampling techniques that produce representative samples. Second, our study's cross-sectional research design makes determining the causality of the relationship between work-family conflict, optimism, and turnover intention difficult. To confirm causal directionality, future research should employ experimental or longitudinal designs. Third, other personal resources, like self-efficacy, hope, resiliency and organisation-based self-esteem, may also mediate the relationship between job demands and employees' turnover intention (Luthans et al., 2006; Vink et al., 2011; Xanthopoulou et al., 2007). Future research is thus encouraged to consider the different types of personal resources in the relationship between work-family conflict and turnover intention. Finally, it is also important that future research include the different job demands from the JD-R model in order to be sure of the significance of the effects of personal variables.

Conclusion

In conclusion, the present study showed that non-work-related factors, such as work-family conflict, influence work-related outcomes, such as turnover intention. This finding supports the JD-R model's extension, i.e., the inclusion of non-work-related factors as antecedents of work-related outcomes in the model. In addition, this study showed that a higher work-family conflict contributes to a lower feeling of optimism in employees, increasing their turnover intention. These findings provide empirical evidence to support the COR theory. Finally, this study contributes to a better understanding of the mechanism of turnover intention and suggests that the organisation's management should provide strategies for improving the work-life balance to reduce turnover intention.

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UDC: 159.944.4: 159.923.2

JOB DEMANDS, JOB RESOURCES AND PERSONAL RESOURCES AS DETERMINANTS OF BURNOUT OF HEALTHCARE WORKERS DURING COVID-19 PANDEMIC

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Abstract. The JD-R model predicts that the job resources and personal resources mitigate the negative effect of job demands on burnout. Previous studies observed that the effect of job demands on burnout was especially strong if employees encountered many job demands or high job demands. During the COVID-19 pandemic, healthcare workers faced high job demands. This study aimed to investigate the role of job demands, job resources and personal resources in burnout among healthcare workers during the COVID-19 pandemic and to identify the most influential determinant in burnout. The sample consisted of 224 healthcare workers (74.6% female) from BIH. The data were collected from the March-end of May 2020. We used Copenhagen Burnout Inventory Scale, Job Demands-Resources Questionnaire, Personal Resources Scale, Organisational-Based Self-Esteem Scale and Resilience Scale. According to the hierarchical regression analysis results, the basic demographic variables, job resources and personal resources had a lower predictive power for healthcare workers' burnout than job demands. Work overload and emotional demands are significant positive predictors of all components of burnout, while age, opportunities for professional development, and resilience are significant negative predictors. Results imply that, during the COVID-19 pandemic, job demands were the most influential determinant of healthcare workers' burnout.

Key words: job demands, job resource, personal resource, burnout, healthcare workers

INTRODUCTION

Burnout is a topic of great interest in occupational psychology, particularly in the helping professions. The concept was established by Freudenberger (1974) and Maslach (1976) and lately has been defined through three qualitative dimensions, which are emotional exhaustion, cynicism and depersonalization, reduced professional efficacy and personal accomplishment (Freudenberger, 1975; Freudenberger, 1977; Maslach, Schaufeli & Leiter, 2001; Maslach & Jackson, 1981). The other definitions of burnout also focus on a state of physical, emotional and mental exhaustion that results from long-term involvement in emotionally demanding work situations (Shirom, 1989; Schaufeli & Greenglass, 2001). Kristensen, Borritz, Villadsen and Christensen (2005) consider that for understanding burnout syndrome, the most important is to attribute fatigue and exhaustion to specific domains or spheres in the person's life. They explore burnout syndrome through three feature domains: 1) personal burnout – the degree of physical and psychological fatigue and exhaustion experienced by the person; 2) work-related burnout – the degree of physical and mental

fatigue and exhaustion that the person perceives as related to their work, and 3) client-related burnout – the degree of physical and mental fatigue and exhaustion that the person perceives as about their work with clients. That enables us to distinguish exhaustion and fatigue caused by work-related and non-work factors, such as health or family problems etc.

Burnout causes severe and far-reaching consequences on an individual level as impaired emotional and physical health and a diminished sense of well-being with increased depression, anxiety, sleep problems, impaired memory, neck and back pain, alcohol consumption, headaches, respiratory infections, gastrointestinal infections (e.g., Kim, Ji & Kao, 2011; Peterson et al., 2008; Stalker & Harvey, 2002), and type 2 diabetes (Melamed, Shirom, Toker, & Shapira, 2006), cardiovascular diseases (Ahola, 2007). In discussing the findings of a ten-year prospective study, Ahola, Väänänen, Koskinen, Kouvonen, & Shirom (2010) concluded, "burnout, especially work-related exhaustion, may be a risk for overall survival". Demerouti, Le Blanc, Bakker, Schaufeli and Hox (2009) concluded that employees who are burned out by their work experience have more psychological and physical health problems, which significantly influence their behaviour at work.

Additionally, burnout negatively affects organisational functioning. Namely, employees with high levels of burnout are less motivated and productive, show low commitment to the organisation and are prone to absenteeism, sickness absence, and intention to quit (Maslach et al., 2001; Xanapoulos, et al., 2007), and they are generally less satisfied with the job (Maslach et al., 2001; Prosser, et al. 1997; Taris, 2006). De Hert (2020) considers that high levels of burnout signify that workers possess insufficient resources to deal with the job demands, leading to impaired job performance. Burned-out workers in the healthcare sector may be less able to be empathic, collaborative, and attentive (Corrigan, 1990). Employees burnout may lead to adverse outcomes such as medical errors, absenteeism, poor communication, and patient care (Garrosa, Moreno-Jiménez, Rodríguez-Muñoz & Rodríguez-Carvajal, 2011; Dimou, Eckelbarger & Riall, 2016). It undermines the quality of services provided (Carney, Donovan, Yurdin, & Starr, 1993; Salyers et al., 2017) and decreases patient satisfaction (Halbesleben & Rathert, 2008; Leiter, Harvie, & Frizzell, 1998) what also may lead to potential malpractice suits and subsequent litigation, with substantial costs for caregivers and hospitals (De Hert, 2020).

The relationship between sociodemographic characteristics and burnout is widely explored. Studies of burnout indicated higher rates of distress and burnout among females (e.g., Batra, Singh, Sharma, Batra & Schvaneveldt, 2020; Maunder et al., 2022; Sabbah, Sabbah, Sabbah, Akoum & Droubi, 2012). In addition, studies showed higher rates of burnout among nurses and frontline workers compared to doctors and non-frontline workers (Batra, Singh, Sharma, Batra & Schvaneveldt, 2020; Maunder, et al., 2022;). The findings about the relationship between sociodemographic factors and burnout rates are inconsistent only for age and marital status (e.g., Brewer & Sharpard, 2004). Thus, Sabbah et al., (2012), Tuuli & Karisalmi, (1999) discovered that younger and married nurses have higher levels of burnout, in contrast to Landa & López-Zafra's (2010) study, which found a higher tendency for the appearance of burnout at older and single people.

The Job Demands Resources (JD-R) model (Demerouti, Bakker, Nachreiner & Schaufeli, 2001) is widely used in exploring work-related outcomes, including burnout. According to this model, work environment characteristics can be classified into two general categories: job demands and resources (Demerouti et al., 2001). Job demands are physical, social, or organisational aspects that require continuous physical and psychological effort, which consequently cause and are physiological and psychological costs (Demerouti et al., 2001). On the other hand, job resources are physical, social, or organisational aspects that are functional in achieving work-related goals, reducing job demands and the associated

physiological and psychological costs, and stimulating personal growth and development (Demerouti et al., 2001).

High and specific job demands (e.g. workload, role ambiguity or emotional demands), over time, may exhaust employees (e.g. Bakker, Demerouti & Schaufeli, 2003; Bakker, Demerouti & Euwema, 2005). At the same time, job resources have the opposite effect. Job resources positively affect employees on personal and organisational levels (Bakker et al., 2005). According to the JD-R model (Bakker & Demerouti, 2007, Bakker & Demerouti, 2014; Demerouti & Bakker, 2011), job resources buffer the relationship between job demands and burnout. Under demanding work conditions, employees in organisations with high resource levels are more capable of dealing with job demands, even exposed to work overload, emotional demands, physical demands, and work–home interference, don't show high levels of burnout if they experienced autonomy, received feedback, had social support, or had a high-quality relationship with their supervisor (Bakker, et al., 2005). Job resources are widely recognised as a protective factor for burnout of employees (Demerouti et al., 2001).

Personal resources are aspects of the self that are generally linked to resiliency and refer to individuals' ability to successfully control and impact their environment (Hobfoll, Johnson, Ennis & Jackson, 2003). According to Schaefer & Taris (2014), crucial personal resources in the JD-R model are optimism, self-efficacy, organisational-based self-esteem (OBSE) and resilience. Studies have shown that personal resources positively affect physical and emotional well-being (Chen, Gully & Eden 2001; Pierce et al., 1989; Scheier & Carver, 1992).

The JD-R model predicts that job resources and personal resources mitigate the negative effect of job demands on burnout (Demerouti et al., 2001). However, some previous studies observed that the impact of job demands on burnout was powerful if employees encountered many or high job demands (Schaufeli & Taris, 2014; Xanthopoulou et al., 2007). Therefore, this study aimed to investigate the role of job demands, job resources and personal resources in burnout among healthcare workers during the COVID-19 pandemic and to identify the most influential determinant of burnout. During the COVID-19 pandemic, healthcare workers faced high job demands. According to a study in China (Jiang, Broome & Ning 2020), a lack of material and human resources during the COVID-19 pandemic is related to a higher workload, making work shifts more exhausting and even requiring extra work to accomplish all necessary tasks. In addition, healthcare workers were confronted with potentially fatal situations, such as pathogen exposure, shift overload, and other changes in their work organisation (Denning et al., 2021). Therefore, we assume that job demands were the most influential determinant of healthcare workers' burnout during the COVID-19 pandemic.

METHOD

Participants and procedure

The sample consisted of 224 healthcare workers (74.6% female) from Bosnia and Herzegovina, ranging from 21 to 64 (M = 42.57, SD = 10.95) years of age. The job tenure ranged from 2 to 41 years (M = 16.87, SD = 10.93). Regarding educational background, 35.3% completed secondary education, 55.8% received a bachelor's degree, and 9.4.5% a master's degree. Regarding marital status, 68.8% are married.

The research was carried out between March and the end of May 2020. Under the supervision of the researchers, data were collected in hospitals during pause time using a

paper-and-pencil format. Participants were selected by convenience sampling method. Researchers have informed all employees about the purpose of the study and invited them to voluntarily (uncompensated) and anonymously participate in the study. Only individuals who gave oral consent to the researchers participated in the study. The survey took about 30 minutes to complete. The questionnaires were completed in groups by the participants.

Instruments

Job Demands-Resources Questionnaire (Bakker, 2014). The questionnaire contains 32 items divided into eight subscales that assess four types of job demands: work overload, cognitive demands, emotional demands, and role conflict, as well as four types of job resources: supervisor support, coworker support, decision-making participation, and opportunity for professional development. Participants answered on a 5-point Likert scale ranging from 1 = never to 5 = very often. Example items include: *"Do you have too many tasks at work?"*. The total score is calculated as the arithmetic mean of the respondents' answers to all items (theoretical range from 1 to 5). For this study, Cronbach's alpha was .88 for Work overload, .80 for Cognitive demands, .84 for Emotional demands, .86 for Role conflict, .94 for Supervisor Support, .85 for Co-worker support, .89 for Participation in decision-making, and .91 for Opportunity for professional development.

Personal Resources Scale (Bakker, 2014). The scale consists of eight items grouped into two subscales measuring: Optimism and Self-efficacy. Participants answered on a 5-point Likert scale ranging from 1 = totally disagree to 5 = totally agree for the Optimism Scale, and on a 4-point Likert scale ranging from 1 = absolutely wrong to 4 = absolutely right for the Self-efficacy scale. Example items include: *"I am always optimistic about my future."*. The total score is calculated as the arithmetic means of the respondents' answers to all subscale items (theoretical range for self-efficacy from 1 to 5 and optimism from 1 to 4). For this study, Cronbach's alpha was .74 for Optimism Scale and .86 for Self-efficacy Scale.

Organisational-Based Self-Esteem Scale (Pierce et.al., 1989). The scale consists of ten items. Participants answered on a 5-point Likert scale ranging from 1 = totally disagree to 5 = totally agree. Example items include: *"I am a trustworthy person in my work environment."*. The total score is calculated as the arithmetic mean of the respondents' answers to all items (theoretical range from 1 to 5). For this study, Cronbach's alpha was .83.

Brief Resilience Scale (Slišković & Burić, 2018). The scale consists of six items. Participants answered on a 5-point Likert scale ranging from 1 = totally disagree to 5 = totally agree. Example items include: *"It's hard for me to recover after something bad happens."*. The total score is calculated as the arithmetic mean of the respondents' answers to all items (theoretical range from 1 to 5). For this study, Cronbach's alpha was .78.

Copenhagen Burnout Inventory Scale (CBI; Kristensen et al., 2005). The questionnaire contains 19 items grouped into three subscales measuring: personal burnout, work-related burnout, and client-related burnout Participants answered on a 7-point Likert scale (ranging from 1 = never to 7 = always) to assess how often they felt in the manner given in each item. Example items include: "How often *do you feel tired?"*. The total score is calculated as the arithmetic means of the respondents' answers to all subscale items (theoretical range for each subscale from 1 to 7). For this study, Cronbach's alpha was .88 for Personal Burnout Scale and .81 for Work-related Burnout Scale, .84 for Client-related burnout, and .91 for Total score.

Demographic Questionnaire. The questionnaire included five questions about demographic characteristics such as gender, age, tenure, education and marital status.

Data analysis

Data analysis used the following statistical procedures: descriptive statistics, correlation analysis, and hierarchical regression analysis. Data analysis was performed using the statistical software SPSS for Windows, version 22.0.

RESULTS

Table 1 shows descriptive statistics measures of used variables. Measures of means and variability, skewness and kurtosis do not indicate significant deviations compared to a normal distribution (Tabachnick & Fidell, 2001).

Table 1. Descriptive statistics measures

	M	*SD*	*Sk*	*Ku*
Personal burnout	2.98	.79	.26	-.04
Work-related burnout	2.76	.75	.41	.34
Client-related burnout	2.77	.77	.31	.41
Total score burnout	2.89	.69	.34	.22
Work overload	3.03	1.01	.34	-.97
Emotional demands	3.99	1.11	-.04	-.88
Cognitive demands	4.12	.79	-.84	-.04
Role conflict	2.54	.95	.42	-.17
Supervisor support	3.13	1.15	.00	-1.02
Co-worker support	3.90	.91	-.67	-.29
Participation in decision-making	4.17	.57	-.57	-1.47
Opportunity for professional development	3.28	.99	-.33	-.23
Optimism	3.80	.86	.70	1.87
Self-efficacy	3.43	.51	-.54	.64
Organisational-based self-esteem	4.02	.55	-.45	1.39
Resilience	3.19	.62	-.04	.77

As expected, the correlation analysis (Table 2) demonstrated a significant positive association between job demands, total score burnout and all components of burnout.

Table 2. Results of correlation analysis

	Personal burnout	Work-related burnout	Client-related burnout	Total score burnout
Personal burnout	-			
Work-related burnout	.894***	-		
Client-related burnout	.753***	.750***	-	
Total score burnout	.937***	.934***	.888***	-

Work overload	.436***	.431***	.342***	.425***
Emotional demands	.408***	.418***	.343***	.408***
Cognitive demands	.260***	.282***	.163*	.240***
Role conflict	.393***	.433***	.316***	.406***
Supervisor support	-.378***	-.356***	-.274***	-.360***
Co-worker support	-.225**	-.279***	-.114	-.240***
PDM	-.174*	-.175**	-.081	-.167*
OPD	-.363***	-.371***	-.340***	-.395***
Optimism	-.195**	-.261***	-.160*	-.215**
Self-efficacy	-.067	-.048	.037	-.039
OBSE	-.095	-.087	.014	-.064
Resilience	-.394***	-.427***	-.286***	-.396***

Note: PDM - Participation in Decision-Making, OPD - Opportunity for Professional Development, OSE - Organisational-Based Self-Esteem.
* $p < .05$; ** $p < .01$; *** $p < .001$

Four hierarchical regression analyses were performed to determine the individual contributions of job demands, job resources, and personal resources to explain personal burnout, work-related burnout, client-related burnout, and total score burnout of healthcare workers. The sequence of introducing the predictor variables into the regression equation was the same in all analyses. In the first step, we introduced demographic variables (gender, age) as a control. In the second step, we introduced job demands. In the third step, we introduced job resources. In the fourth step, we introduced personal resources. Tables 3 to 6 show the results.

Table 3. Results of hierarchical regression analysis of demographic characteristics, job demands, job resources, and personal resources for personal burnout

	Model			
	1	2	3	4
	β	β	β	β
Gender	.166*	.127*	.084	.068
Age	-.154*	-.144*	-.164**	-.175**
Work overload		.247***	.252*	.242**
Emotional demands		.229**	.180**	.189**
Cognitive demands		.018	.076	.093
Role conflict		.223***	.118	.096
Supervisor support			-.215**	-.169*
Co-worker support			-.036	-.009
PDM			.053	.088
OPD			-.206**	-.164**
Optimism				-.048
Self-efficacy				-.006
OBSE				-.026
Resilience				-.259***
R^2	.047	.332	.443	.512
F	5.135**	16.982***	15.989***	14.759***
ΔR^2		.285	.111	.069
ΔF		21.880***	10.017***	6.950***

Note: PDM - Participation in Decision-Making, OPD - Opportunity for Professional Development, OSE - Organisational-Based Self-Esteem.
* $p < .05$; ** $p < .01$; *** $p < .001$

The obtained results (Table 3) show that demographic characteristics explained 5% of the variance of personal burnout, which indicates weak predictive power ($R^2 < .13$; Cohen, 1988) of demographic characteristics for personal burnout. The job demands included in the second phase explained an additional 28.5% of the variance of personal burnout, which indicates substantial predictive power ($R^2 > .26$; Cohen, 1988) of job demands for personal burnout. The job resources included in the third phase explained an additional 11.1% of the variance of personal burnout, which indicates weak predictive power of job demands for personal burnout. The personal resources included in the fourth phase explained an additional 7% of the variance of personal burnout, which indicates the weak predictive power of personal resources for personal burnout. The model as a whole explained 51.2% of the total variance of personal burnout, and significant partial predictors are the age ($\beta = -.175$, $p < .01$), work overload ($\beta = .242$, $p < .01$), emotional demands ($\beta = .189$, $p < .05$), supervisor support ($\beta = -.169$, $p < .01$), opportunity for professional development ($\beta = -.164$, $p < .05$) and resilience ($\beta = -.259$, $p < .001$).

Table 4. Results of hierarchical regression analysis of demographic characteristics, job demands, job resources, and personal resources for work-related burnout

	Model			
	1	2	3	4
	β	β	β	β
Gender	.109	.066	.025	.015
Age	-.135*	-.129*	-.164**	-.165**
Work overload		.226**	.234*	.227***
Emotional demands		.233**	.193**	.202**
Cognitive demands		.047	.105	.112
Role conflict		.275***	.154**	.124*
Supervisor support			-.154**	-.095
Co-worker support			-.139**	-.119
PDM			.072	.089
OPD			-.210**	-.158**
Optimism				-.139**
Self-efficacy				.015
OBSE				.021
Resilience				-.263***
R^2	.027	.354	.469	.560
F	2.968*	18.806***	17.820***	18.011***
ΔR^2		.326	.115	.091
ΔF		26.018***	10.911***	10.292***

Note: PDM - Participation in Decision-Making, OPD - Opportunity for Professional Development, OSE - Organisational-Based Self-Esteem.
* $p < .05$; ** $p < .01$; *** $p < .001$

The results in Table 4 show that demographic characteristics explained 3% of the variance of work-related burnout, which indicates weak predictive power of demographic characteristics for work-related burnout. The job demands included in the second phase explained an additional 32.5% of the variance of work-related burnout, which indicates substantial predictive power ($R^2 > .26$; Cohen, 1988) of job demands for work-related burnout. The job resources included in the third phase explained an additional 11.5% of the variance of work-related burnout, which indicates weak predictive power of job demands for work-related burnout. The personal resources included in the fourth phase explained an additional 9.1% of the variance of work-related burnout, which indicates the weak predictive power of personal resources for work-related burnout. The model as a whole explained 56% of the total variance of work-related burnout, and significant partial predictors are the age (β = -.165, $p < .01$), work overload (β = .227, $p < .001$), emotional demands (β = .202, $p < .02$), supervisor support (β = .124, $p < .05$), opportunity for professional development (β = -.158, p < .01), optimism (β = -.139, $p < .01$) and resilience (β = -.263, $p < .001$).

Table 5. Results of hierarchical regression analysis of demographic characteristics, job demands, job resources, and personal resources for client-related burnout

	Model			
	1	2	3	4
	β	β	β	β
Gender	-.043	-.073	-.102	-.118
Age	-.192**	-.186**	-.203**	-.202**
Work overload		.199**	.185**	.166*
Emotional demands		.265**	.222**	.209**
Cognitive demands		-.060	-.013	-.012
Role conflict		.180**	.108**	.090
Supervisor support			-.163*	-.135
Co-worker support			.008	.024
PDM			.101	.090
OPD			-.258***	-.232**
Optimism				-.060
Self-efficacy				.044
OBSE				.084
Resilience				-.223**
R^2	.040	.251	.347	.393
F	4.403*	11.479***	10.752***	9.149**
ΔR^2		.210	.096	.046
ΔF		14.452***	7.442***	3.747**

Note: PDM - Participation in Decision-Making, OPD - Opportunity for Professional Development, OSE - Organisational-Based Self-Esteem.
* $p < .05$; ** $p < .01$; *** $p < .001$

The obtained results (Table 5) show that demographic characteristics explained 4% of the variance of client-related burnout, which indicates weak predictive power of demographic characteristics for client-related burnout. The job demands included in the second phase explained an additional 21% of the variance of client-related burnout, which indicates moderate predictive power ($.13 < R^2 < .26$; Cohen, 1988) of job demands for client-related burnout. The job resources included in the third phase explained an additional 9.6% of the

variance of client-related burnout, which indicates weak predictive power of job demands for client-related burnout. The personal resources included in the fourth phase explained an additional 4.6% of the variance of client-related burnout, which indicates the weak predictive power of personal resources for client-related burnout. The model as a whole explained 39.3% of the total variance of client-related burnout, and significant partial predictors are the age (β = -.202, $p < .01$), work overload (β = .166, $p < .05$), emotional demands (β = .209, $p < .05$), opportunity for professional development (β = -.232, $p < .01$) and resilience (β = -.223, $p < .01$).

Table 6. Results of hierarchical regression analysis of demographic characteristics, job demands, job resources, and personal resources for total score burnout

	Model			
	1	2	3	4
	β	β	β	β
Gender	.089	.048	.007	-.008
Age	-.157*	-.147*	-.175**	-.180**
Work overload		.234**	.238*	.225*
Emotional demands		.253**	.203**	.202**
Cognitive demands		-.008	.055	.065
Role conflict		.244***	.132*	.108
Supervisor support			-.077	-.054
Co-worker support			-.173*	-.129
PDM			.072	.085
OPD			-.251***	-.210**
Optimism				-.085
Self-efficacy				.010
OBSE				.038
Resilience				-.260***
R^2	.030	.328	.451	.522
F	3.236*	16.573***	16.455***	15.273***
ΔR^2		.298	.124	.070
ΔF		22.570***	11.271***	7.209***

Note: PDM - Participation in Decision-Making, OPD - Opportunity for Professional Development, OSE - Organisational-Based Self-Esteem.
* $p < .05$; ** $p < .01$; *** $p < .001$

The results in Table 6 show that demographic characteristics explained 3% of the variance of total score burnout, which indicates weak predictive power ($R^2 < .13$; Cohen, 1988) of demographic characteristics for total score burnout. The job demands included in the second phase explained an additional 29.8% of the variance of total score burnout, which indicates substantial predictive power of job demands for total score burnout. The job resources included in the third phase explained an additional 12.4% of the variance of total score burnout, which indicates weak predictive power of job demands for total score burnout. The personal resources included in the fourth phase explained an additional 7% of the variance of total score burnout, which indicates the weak predictive power of personal resources for total score burnout. The model as a whole explained 52.2% of the total variance of the total score burnout, and significant partial predictors are the age (β = -.180, $p < .001$),

work overload (β = .225, $p < .05$), emotional demands (β = .202, $p < .01$), opportunity for professional development (β = -.210, $p < .01$) and resilience (β = -.260, $p < .01$).

DISCUSSION AND CONCLUSION

This study aimed to investigate the role of job demands, job resources and personal resources in burnout among healthcare workers during the COVID-19 pandemic and to identify the most influential determinant in burnout while basic demographic characteristics were controlled.

As we postulated, job demands explained the highest percentage of the variance of the burnout of healthcare workers during the COVID-19 pandemic. This result is in line with previous studies (e.g., Schaufeli & Taris, 2014; Xanthopoulou et al., 2007), which also found that the impact of job demands on burnout was powerful if employees encountered many or high job demands. During the COVID-19 pandemic, healthcare workers faced numerous and extreme job demands, including potentially fatal situations such as pathogen exposure, shift overload, and changes in their work organisation (Denning et al., 2021). Work overload and emotional demands were significant positive predictors of all burnout components in our study. Additionally, role conflict was a significant positive predictor of client-related burnout in healthcare workers. Work overload is also a positive predictor of emotional exhaustion among health professionals in hospitals and health centres, according to Garrosa, Moreno-Jiménez, Liang, and González (2008). Lambert, Lambert, Petrini, and Zhang (2007) and Sabbah et al. (2012) also have identified role conflict as a factor which increases burnout risk.

Regarding job resources, only the opportunity for professional development proved to be a significant negative predictor of all components of healthcare workers' burnout. COVID -19 pandemic was a global crisis, especially for health workers who faced many challenges in behaviour and treatment. They had to learn new ways to protect themselves and their patients, which was an opportunity for professional development. According to Johnsen and Saus (2019), interpreting a crisis as a challenge implies people quickly engage and adapt to these situations, which helps them acquire more experience. Henderson (2015) claims that people with high adaptability to challenges can respond more quickly and effectively because they see complex scenarios as learning opportunities. In addition, the prehension of crisis as the challenge is a stress control factor in highly stressful jobs, especially among health professionals (Maramis & Cong, 2019), which prevents burnout (Bartone & Bowles, 2020). Besides the opportunity for professional development, supervisor support was also a significant negative predictor of healthcare workers' burnout. Gleason et al. (2020) have also found that social support was negatively related to burnout among healthcare workers during the COVID-19 pandemic. Some previous studies (e.g. Devereux, Hastings, Noone, Firth & Totsika 2009; Thomas & Rose, 2010) also indicate that support from supervisors or colleagues is associated with low levels of burnout.

When it comes to personal resources, only resilience was found to be a significant negative predictor of all burnout components in healthcare workers. Simultaneously, optimism was a significant negative predictor of personal and work-related burnout. These findings are not surprising and are consistent with previous research. For example, Guo et al., (2018) also discovered a negative relationship between resilience and burnout symptoms. Furthermore, Sriharan, West, Almost, and Hamza (2021) reported that resilience helps nurses mitigate emotional exhaustion during COVID-19. Optimism increases the likelihood of taking action and dealing with threats (Aspinwall & Taylor, 1997), reduces the effects of occupational stressors, and, as a result, protects against the development of work stress and

burnout (Otero, Castro, Santiago & Villardefrancos, 2010; Salmela-Aro, Tolvanen & Nurmi 2009). Özdemir and Kerse (2020) also have found a negative relationship between optimism and emotional exhaustion during COVID-19 and stress.

As for demographic variables, age proved to be a significant negative predictor of all healthcare workers' burnout components. Several studies conducted during the COVID-19 pandemic also confirmed that younger healthcare workers experience higher rates of burnout (e.g. Sanghera et al., 2020; Sikaras et al., 2021). This may be explained by the fact that young nurses are most enthusiastic about their job (Koivula, Paunonen & Laippala 2000). According to Maunder et al. (2022), younger adults were more likely to have children at home, which could have been an additional source of stress during the pandemic.

Finally, the current study has some limitations. First, because the study used convenience sampling, the effect of a "healthy worker" was possible (Karasek & Theorell, 1990). Workers who performed their tasks at the time of the study (meaning relatively healthy workers) were included. At the same time, those who were absent due to illness, disability, or work burnout were excluded. Second, respondents' self-assessments were used to collect data. The possibility that respondents were more inclined to complain and provide more detailed self-descriptions of their problems should be considered when interpreting such results.

However, the limitations mentioned do not diminish the significance of the findings, which point to the important role of job demands in the burnout phenomenon among healthcare workers, which has significant practical implications. To be specific, it is essential to focus on better distribution of job demands to reduce work overload in order to prevent burnout among healthcare workers. Furthermore, it is important to provide them with social support in order to mitigate the effects of their job's emotional demands. Finally, our findings extend the JD-R model by demonstrating that in extreme situations, such as the COVID-19 pandemic, job and personal resources cannot mitigate the negative effect of high job demands on burnout.

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EDUCATIONAL PSYCHOLOGY

UDC: 378:159.923

BARRIERS TO EFFECTIVE STUDY IN HIGHER EDUCATION: CONTENT ANALYSIS OF STUDENTS' POST-PANDEMIC REPORTS

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Abstract. The transition from secondary school to higher education is often a challenging experience for young people. Studying at the university in the uncertain times of the global pandemic of COVID-19 might be even more demanding than in the past. Distance or hybrid teaching and social isolation together with permanent health concerns brought unprecedented well-being threats among the general student population. And their impact is probably larger on vulnerable groups of students. This study explores the perceived barriers to effective study among the general population of higher education students in Slovakia. The authors analysed short written reports from 175 university students. The participants submitted their reports as voluntary open questions in the larger survey. Three independent coders identified two main content categories: internal barriers and external barriers. Within the internal barriers category, special educational needs, mental health issues and psychological distress were highly prevalent in this sample. The participants reported mainly distance teaching, social distancing and educators' approaches as external barriers. Based on the results, we discuss implications for integrating well-being into higher education learning and teaching and also the support for vulnerable groups of students including diverse needs in well-being, mental health and special educational needs.

Keywords: higher education students, barriers, special educational needs, mental health, well-being

INTRODUCTION

The transition from secondary school to higher education is often a challenging experience for young people. Higher education students report perceiving academic stress which is related to individual characteristics of the students or comes from the university environment (Yikealo et al., 2018), and social distractions were also reported as hindering effective study (Turner et al., 2015). A high level of perceived academic stress is a barrier to successful study and affects both academic performance and overall adjustment (Turner et al., 2015).

A specifically vulnerable group are students with special educational needs. Individuals with sensory or physical disabilities, learning and attention disorders, or health problems face specific barriers and challenges, which may vary for each of those specific groups (Antalová et al., 2022). Especially students with so-called invisible disabilities (e. g., learning disabilities, attention deficit disorders or mental health issues) often have difficulties asking for support because they are afraid of stigmatisation and ostracism (Antalová et al., 2022; Antalová & Sokolová, 2022; Chen, 2021). Even though the prevalence data are not consistent, the number of students with special educational needs is rising in higher education (Lightfoot et al., 2018; Sokolová & Lemešová, 2022).

Studying at university in the uncertain times of the global pandemic of COVID-19 might be even more demanding than in the pre-COVID period. Distance or hybrid teaching

and social isolation together with permanent health concerns brought unprecedented well-being threats among the general student population (Kohls et al., 2021). And their impact is probably larger on vulnerable groups of students, especially when taking into consideration the fact that higher education students are at risk of depressive symptoms (Kohls et al., 2021). Researchers reported the negative impact of the COVID-19 pandemic on the well-being and mental health of students across countries and study fields (Anwar et al., 2020; Baticulon et al., 2021; Clabaugh et al., 2021; Kohls et al., 2021; Marler et al., 2021).

The research findings focus on two main areas of the negative impact of the COVID-19 pandemic. The first one is related directly to emotional well-being, general stress and mental health (Clabaugh et al., 2021; Ibaraki, 2022; Kemp et al., 2022; Kohls et al., 2021). Students in the United States reported higher levels of neuroticism, an external locus of control and academic stress, and poor emotional well-being (Clabaugh et al., 2021). COVID-19-related distress appeared to correlate negatively with academic motivation and a sense of belonging among university students (Marler et al., 2021). Higher perceived stress, higher experienced loneliness, and lower social support during the COVID-19 pandemic significantly predicted higher scores of depressive symptoms, also higher hazardous alcohol use, and higher levels of eating disorder symptoms among higher education students in Germany (Kohls et al., 2021).

The studies in the second group explore the impact of distance education during the COVID-19 pandemic and the challenges higher education students faced in their learning, academic motivation and performance. These results are to a certain extent consistent with the findings of pre-COVID studies about the limitations of virtual education and e-learning, e. g., problems with the technology itself, cognitive barriers (information overload or mind wandering) and communication barriers (social isolation etc.) (Kohan et al., 2017). Students in the Philippines reported technological, individual, domestic, institutional, and community barriers in their learning, they faced difficulties in adapting to distance education, and adjusting learning styles, and they also reported poor communication between educators and learners (Baticulon et al., 2021). Barriers to learning were often related to the technology used for distance teaching, problems with the technology, lack of training, low motivation, resource constraints and low computer literacy (Anwar et al., 2020). Especially external barriers had a high impact on study motivation and academic outcomes, however, motivation-boosting teaching methods had the potential to increase motivation and academic achievement (Nguyen, 2021). The COVID-19 situation brought new problems and barriers in education; however, it might also deepen the existing problems in some students.

In Slovakia, universities were the first educational institutions that moved to distance teaching immediately after the first COVID-19 cases in March 2020. Most higher education institutions stayed in this mode for a year and a half or two years. In spring 2022, almost all higher education institutions moved back to the present or hybrid format of education. This study aims to identify the experiences of barriers to effective study among the general population of Slovak higher education students. The data were collected in the period of transition to post-COVID face-to-face education, which means that students might reflect general, pandemic-independent barriers, and also the barriers and problems related to distance and hybrid education or the transition in their education.

METHOD

Participants

The participants in this study were higher education students (N = 175) from seven different higher education institutions in different regions of Slovakia (Comenius University in Bratislava, the Slovak University of Technology in Bratislava, the University of Economics in Bratislava, University of Žilina, the Slovak University of Agriculture in Nitra, University of Ss. Cyril and Methodius in Trnava, and the University of Veterinary Medicine and Pharmacy in Košice). They studied humanities, social sciences and STEM fields of study. Most of the sample were women (n = 134; 77%), and the average age of the sample was 23.5 (SD = 3.99). Each participant provided a short written report describing currently experienced barriers in their effective studies at their university in the current academic year. The average length of the report was 31 words.

Data collection

The participants submitted their reports as a voluntary open question (*Are there any circumstances or barriers that affect your studies? If yes, please, describe them*.) in the larger survey, which was focused on the learning and coping strategies of higher education students (N = 438, 40% of survey participants reported perceived barriers in their studies and these were included in this analysis). All university institutions in Slovakia were approached with an online survey created under the RedCap platform (Harris et al., 2009, 2019). The administration of the universities used their internal channels to share the invitation to participate in the research with their students. The data were collected from February 2022 to June 2022 as a part of project VEGA 1/0119/21. For many universities in Slovakia, this was the first semester of full face-to-face teaching after two years of distance or hybrid teaching, which meant that all the participants had both distance and face-to-face education experiences in the academic year of data collection. The survey was anonymous and the participants were treated following the APA ethical standards and the Declaration of Helsinki. The whole study was approved by the Ethical Committee of the Faculty of Social and Economic Sciences, Comenius University in Bratislava.

Data analysis

The data were analysed using the qualitative inductive content analysis approach. Content analysis is an approach suitable for any type of written material (Bengtsson, 2016), including brief open-ended questions in the questionnaire (Donath et al., 2011). We used a qualitative approach in which the occurrence of categories and subcategories is not quantified, each category is described and rather than frequency, we focused on the content and meaning of each category. The inductive analysis allowed the authors to apply a data-driven approach, i. e. to extract the categories from the data without the previous theoretical framework. The steps suggested by Bengtsson (2016) were used in the manifest data analysis: decontextualization (identification of meaning units, creation of coding system), recontextualization (comparison of the units with the original data), categorisation (identification of homogenous unit groups), and compilation (drawing the conclusions).

The whole data set was analysed by the primary coder first. Then the created codebook was used by two secondary coders. The final structure of categories is a result of

the consensus of all three coders. If the statement contained several barriers, it was coded within several subcategories.

RESULTS

We identified two main content categories: external sources of perceived barriers and internal sources of perceived barriers (Tables 1 and 2). Within the external barriers category (Table 1), three main subcategories were classified: ***distance teaching*** (including the lack of social contact, educators´ teaching skills and overall approach in distance education, problems with educational technology and also the transition back to face-to-face education); ***study environment at university*** (including the approach of educators in general, their teaching methods and materials, too theoretical or boring content, and also the acceptance of the students and their special educational needs by educators and other students); and ***role conflicts*** (this subcategory covers the barriers related to the balance between university studies and family, workplace or other relationships that may hinder students´ active participation in their studies).

Table 1. Content category: external sources of perceived barriers

Category	Subcategories	Meaning units	Examples of excerpts
External sources of perceived barriers	Distance education	lack of social contact	*"Personally, what I miss most at the moment is the personal contact and socialising."*
		educators´ skills	*"It's very demotivating, especially if it also emanates from the teacher, … if he or she makes excuses for the current situation."*
		use of technology	*"Technology is sometimes not good enough (internet, camera, microphone)."*
		transition back to face-to-face education	*"It is easier for me to organise my studies online."*
	Study environment	educators´ approach	*"Stressful, mentally challenging especially when teachers don't follow the rules."*
		educational content	*"Useless theory without any link to examples."*
		teaching methods	*"Teachers do not provide any or no sensible handouts, they do not have prepared presentations from which to take notes and they just talk…"*
		acceptance of educational needs	*"I'm different, but my surroundings don't accept it."*
	Role conflicts	family	*"I have a small child I need to take care of."*
		workplace	*"Work, since I don't have enough time for school."*
		other relationships	*"Situational things, e. g. when I have a conflict with a close person."*

The internal barriers were divided into four subcategories (Table 2). ***The health issues*** subcategory covers various types of physical and mental health problems and disabilities that directly or indirectly affect students´ participation in university education. ***The psychological and emotional disturbance*** category includes frequently mentioned anxiety, stress, fatigue or the lack of motivation. These could emerge from learning and teaching situations or may have other reasons; however, these overall psychological and emotional conditions have an impact on their effective studies. The subcategory of ***study skills*** is focused on a variety of malfunctioning study skills that students perceived as hindering their effective studies, e. g., poor study and time management, low ability to cope with exam anxiety, laziness or procrastination, lack of concentration or mind wandering, a problem with working in a group of students, stress related to public speaking and inability to understand more demanding content. The last subcategory covers ***special educational needs*** related to disabilities and disorders that directly affect learning, i. e. learning disabilities (dyslexia, dysgraphia, dyscalculia etc.) and attention disorders (ADHD or ADD).

Table 2. Content category: internal sources of perceived barriers

Category	Subcategories	Meaning units	Examples of excerpts
Internal sources of perceived barriers	Health issues	chronic disease	*"High blood pressure and thyroid gland disorder, I can't get concentrated and remember things very well."*
		disability	*"Since I am in a wheelchair, I feel the physical barriers the most - especially when classes are held upstairs."*
	Psychological and emotional disturbance	mental health issues	*"I take medication for depression, I have a frequent problem with insomnia."*
		anxiety	*"I feel the fear of failure, of being caught off guard by questions I don't know the answer to."*
		stress	*"It's extremely mentally demanding, sometimes I'm afraid that the amount of stress will give me stomach ulcers in the future."*
		lack of motivation	*"I have trouble paying attention in exercises and lectures and can't motivate myself."*
		fatigue, overload	*"Constant fatigue, affecting my ability to learn."*
	Study skills	poor study management	*"The problem of scheduling my time efficiently."*
		exam anxiety	*"I'm stressed over exams, it doesn't matter if it's online or face-to-face if it's a test or an oral exam."*
		laziness, procrastination	*"Instead of looking for a way to learn it better, I slip into a cycle of procrastination that I can't get out of."*
		lack of concentration	*"Attention, problems, nervousness, stress, laziness, "scattered" thoughts."*
		problem of working in a group	*"My biggest problem is working with my classmates in a group on collaborative projects and term papers."*

	stress of speaking in public	*"I am often nervous when I have to say something during a seminar."*
	language barrier	*"Growing up in a bilingual environment - a shortage of words I want to use in conversation."*
	understanding the content	*"Too professionally written texts, sometimes I don't understand them."*
Special educational needs	learning disabilities	*"I have a pretty big problem with writing and wording papers correctly. It takes me a lot of time. I am left-handed and have a writing disorder."*
	ADHD/ADD	*"ADHD, if I am not interested in the topic, I have to learn in parts and not in long chunks."*

DISCUSSION

We used qualitative content analysis of students' written reports to identify categories of perceived barriers to effective higher education studies. The data were collected during the time of transition from distance to face-to-face education after the COVID-19 pandemic. That is why the participants might report both general barriers they faced regardless of the pandemic or the barriers arising from the changes in education during and after the pandemic. The perceived barriers were classified as coming from either external or internal sources. These categories may be interrelated and overlap to a certain extent. Sometimes a combination of internal and external factors may be experienced as a barrier, however, a similar structure of perceived barriers was identified in other studies too (Antalová et al., 2022; Turner et al., 2015; Yikealo et al., 2018). As our results show, there is a large group of higher education students with a variety of difficulties that make their studies challenging, forty per cent of participants in our research (out of $N = 438$) reported some barriers and challenges in their studies. Besides the barriers caused by external factors like distance teaching or study environment in general, internal barriers including emotional disturbances, health issues and special educational needs were highly prevalent. These include both diagnosed and treated diseases and disorders but also hidden difficulties and barriers. Even those who have a diagnosed and officially recognised disability often have to navigate the university environment on their own (explaining the diagnosis, asking for understanding and action), which reinforces the perception of their 'otherness' or their fear of stigmatisation and makes it more difficult for them to study (Lightfoot et al., 2018; O'Byrne et al., 2019).

There is a large proportion of students who are vulnerable due to internal barriers and the effects of distance teaching during the COVID-19 pandemic. COVID-19 has "exacerbated existing mental health concerns and created additional problems related to low levels of motivation, increased loneliness, and heightened levels of stress" (Ibaraki, 2022). These problems were prevalent during distance education; however, they might affect the way how students learn after the transition back to face-to-face education too. Students who perceive a variety of barriers to their effective studies might have the potential to graduate successfully, however, many of them drop out of the education system, which happens more often to individuals with special educational needs than in the general population (Chen, 2021).

Based on the results, we believe that there is a need for integrating well-being into higher education learning and teaching and also the support for vulnerable groups of students

including diverse needs in well-being, mental health and special educational needs. In general, students in the transition to university need support in developing their self-management and study skills, including the management of challenging life situations, self-efficacy and resilience, which are positively linked to academic engagement and achievement (Turner et al., 2017). An inclusive and student-centred approach covering both tutoring and psychological services in the university setting and the approach of educators should help students to overcome the barriers. As far as faculties have regular contact with the students, they should look for ways to support students' emotional needs (Ibaraki, 2022). According to some authors, higher education institutions play a crucial role in supporting students' well-being (Kemp et al., 2022). Interventions promoting help-seeking and targeting a variety of mental health conditions may help to mitigate the impact of COVID-19 and distance teaching (Kohls et al., 2021). The implementation of student-centred interventions plays also an important role in facing challenges during the COVID-19 pandemic and beyond (Baticulon et al., 2021). Both educators and students can be trained to respond to the diverse needs of other students. Training in inclusive education for faculty members improves their conceptions and knowledge of the individual conditions of students (Carballo et al., 2021). Especially educators tend to perceive these barriers as failures in students and inclusive education training may help develop empathy and acceptance among faculty. Similarly, peer mentoring programmes may increase the feeling of empowerment, a sense of belonging in the academic setting, and empathy and awareness of diverse educational barriers and needs (Cardinot & Flynn, 2022).

Even though our study revealed novel findings in Slovak higher education settings, it has several limitations. Firstly, the samples from various higher education institutions were not balanced. The findings represent examples of barriers perceived among Slovak higher education students but they cannot be generalised to the Slovak population of students. Also, the form of a written report in an online survey could be limiting for some participants in expressing their emotions and experiences, as such, it provides just a brief insight into the complex issue of barriers to effective study. On the other hand, this form allowed us to collect the data fully anonymously, which might be encouraging for some students.

CONCLUSION

In the present study, we focused on the perceived barriers to higher education among the general population of university students in Slovakia. As the data were collected during the transition from distance to face-to-face teaching after the COVID-19 pandemic, the participants reported both general and pandemic-related barriers in their education. We identified two main categories of barriers experienced by Slovak higher education students. Identifying these barriers can help in understanding the diversity of social and educational needs among higher education students and it can also serve as a blueprint for planning educational and psychological interventions for these students.

Acknowledgement. This study was supported by grant agency VEGA, grant no. 1/0119/21 Learning disabilities and attention disorders in tertiary education students: Prevalence, symptomatology, coping and learning strategies.

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PERSONALITY
& INDIVIDUAL DIFFERENCES

UDC: 159.923.2:316.316.624

MACHIAVELLIANISM, SELF-EFFICACY, CONSCIENTIOUSNESS AND SOCIAL DESIRABILITY IN CRIMINAL RECIDIVISM

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Abstract. This study aimed to identify and analyse potential statistical differences between criminal recidivists and non-recidivists' scores for Machiavellianism and social desirability; the potential role of self-efficacy as a predictor of Machiavellianism and of Machiavellianism as a predictor of social desirability in the stated population; and the relationship between age and social desirability, self-efficacy and conscientiousness. An omnibus questionnaire, including parts of the CP5F Personality Questionnaire, a Machiavellianism scale, and a self-efficacy scale, was distributed to 460 men imprisoned in seven Romanian penitentiaries. The age range was 21-65 years (M = 39.2, SD = 10.3). 38% of participants were repeat offenders, of which 21% had more than two prior convictions. A simple linear regression revealed that 14% of the variation in social desirability was accounted for by Machiavellianism (β = .12, p < .01) and 27% of the variation in Machiavellianism by self-efficacy (β = .93, p < .05). Recidivists scored significantly lower for social desirability (t (458) = -3.56, p < .01), and significantly higher for Machiavellianism (t (458) = 2.01, p < .05). Additionally, the age significantly correlated with social desirability (r = .38, p < .05), self-efficacy (r = .43, p < .05) and conscientiousness (r = .45, p < .05). These results are of practical relevance as insincere behaviour aimed to please penitentiary staff impedes identification of inmates' needs and risks in terms of rehabilitation.

Keywords: criminal recidivism, Machiavellianism, social desirability, self-efficacy

INTRODUCTION

In the fight to prevent criminal recidivism, one of the challenges faced by specialists in the criminal justice system is knowing the personality of criminals. The personality traits that may be associated with criminal behaviour include Machiavellianism (Mandiwana, 2021), which is characterised by cunning, manipulation, and a drive to use any means to gain power (Towler, 2020). Together with psychopathy and narcissism, it forms the dark triad of personality (Jones & Paulhus, 2014). Referring to specialised literature, Anțibor (2021) notes that Machiavellian tendencies are mainly observed under stress, as they help a person deal with stressful situations.

As defined in clinical psychology, self-efficacy is the ability to act efficiently in order to attain desired results, in accordance with one's own expectations (American Psychological Association, 2020). Considering that deprivation of liberty is a major source of stress, and that self-efficacy has been found to be a significant positive predictor of Machiavellianism in the general population (Zaman & Qayyum, 2020), the need emerges for research on the

relationship between self-efficacy and Machiavellianism among prison inmates, with the goal of identifying potential obstacles to their social reintegration.

Another important facet of the personality of prison inmates that needs to be explored for this purpose is conscientiousness, which refers to a person's inclination to comply with social norms in terms of impulse control and delaying gratification and to plan ahead to achieve intended goals (Roberts, Jackson, Fayard, Edmonds & Meints, 2009). It is considered to be one of the traits that contribute to the shaping of moral behaviour (Ahmed & Ahmad, 2015). Thus, taking into account individual inmates' levels of conscientiousness, it is possible to adapt the process of their rehabilitation accordingly and predict the likelihood of successful social reintegration. Conscientiousness has previously been identified as a significant negative predictor of criminal recidivism in a study conducted on 51 inmates of a US correctional facility (Clower & Bothwell, 2001). Similarly, Ahmed (2019), who investigated the relationship between personality traits and recidivism among 256 ex-prisoners in Nigeria, has established a direct link between conscientiousness and criminal recidivism. The author clarifies that individuals characterised by a low level of conscientiousness are easily influenced by others' decisions and can easily relapse.

Considering that one of the terms most often used in definitions of Machiavellianism is manipulation (Anțibor, 2021; Pilch, 2008; Wastell & Booth, 2003), the need to take into account prison inmates' level of social desirability, which entails manipulative behaviour, becomes apparent. For the purposes of this study, social desirability is defined as a tendency to present oneself favourably and give answers in accordance with social norms rather than ones which reflect one's true beliefs (American Psychological Association, 2020).

In studies of personality traits such as those discussed above, age is also a factor that must be taken into consideration, since an individual's stage of psychological development depends upon it and since it has moreover been identified as a key variable correlated with criminality (DeLisi & Vaughn, 2015). Regarding conscientiousness, studies have shown that scores for this personality trait are higher in middle age (Donnellan & Lucas, 2008; Rantanen, Metsäpelto, Feldt, Pulckinen & Kokko, 2007). Regarding self-efficacy, the literature indicates that its level increases throughout life, reaching a peak in middle age, followed by a gradual decrease after the age of 60 or so (Brim, 1974; Dowd, 1975; Gurin & Brim, 1984; Woodward & Walls ton, 1987, as cited in Gecas, 1989). As for Machiavellianism, studies have shown that in adults, levels of this trait decrease with age (Götz, Bleidorn, & Rentfrow, 2020; Mudrack, 1989). Conversely, age and social desirability have been observed to be positively correlated (Soubelet & Salthouse, 2011; Vigil-Colet, Morales-Vives & Lorenzo-Seva, 2013).

In April 2022, 23,297 persons deprived of liberty were registered in Romania, in the custody of more than 40 penitentiary units (National Administration of Penitentiaries, 2022). 8,574 of them were recidivists and 6,522 had prior criminal records. In light of this data, there is a need to devise effective methods to reduce the risk of recidivism among prison inmates in Romania. Investigating the personality traits discussed above in the prison population is essential for this purpose, as they favour the concealment of persistent criminal propensities, which in turn impedes inmates' social reintegration. At the end of this study, we present recommendations for future research, which are also intended to support practitioners in the educational and psychosocial assistance services in Romanian penitentiaries in addressing inmates' concealment of persistent criminal propensities.

METHODOLOGY

Objectives

1. Identifying potential statistical differences between the Machiavellianism and social desirability scores of incarcerated criminal recidivists on the one hand and non-recidivists on the other.
2. Evaluating the potential role of self-efficacy as a predictor of Machiavellianism in the stated population.
3. Evaluating the potential role of Machiavellianism as a predictor of social desirability in the stated population.
4. Identifying the relationship between age and self-efficacy, social desirability and conscientiousness in the stated population.

Hypotheses

H1. Recidivists present a higher Machiavellianism score but a lower social desirability score than non-recidivists.

H2. Self-efficacy is a statistically significant predictor of Machiavellianism.

H3. Machiavellianism is a statistically significant predictor of social desirability.

H4. There is a statistically significant association between age and self-efficacy, social desirability and conscientiousness.

Instruments

An omnibus questionnaire was developed and distributed to participants to collect socio-demographic data, information regarding their families, criminal history, health and substance consumption, as well as responses to items from three psychological assessment tools described below, namely the *CP5F Personality Questionnaire,* a *Machiavellianism Scale,* and a *Self-Efficacy Scale (SES)*.

The CP5F personality questionnaire assesses the five factors of the Big Five Model, namely *extraversion, emotional stability, conscientiousness, agreeableness* and *autonomy.* It was devised and validated on the Romanian population (Albu, 2008), on the model of the existing FFPI (Five-Factor Personality Inventory) (Hendriks, Hofstee & De Raad, 1999). It consists of 130 items, grouped into six scales, adding a social desirability scale to the Big Five. Responses are recorded on a Likert scale, where 1 = “describes me very poorly”; 2 = “describes me poorly”; 3 = “describes me somewhat”; 4 = “describes me well”; 5 = “describes me very well”. In the present study, only the conscientiousness and social desirability scale were applied ($\alpha = 0.883$).

The Machiavellianism scale used consists of six items and measures the degree to which a person exhibits unscrupulous behaviour (Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger, & Gough, 2006). It is made available for research purposes by Researchcentral, Bucharest ($\alpha = 0.669$) (Iliescu, n.d.a).

The self-efficacy scale used consists of ten items and measures one's belief that one's own actions are or can be responsible for the success of a certain activity (Goldberg et al., 2006). It is made available for research purposes by Researchcentral, Bucharest (Iliescu, n.d.b). The items are rated from 1 to 4, where 1 = “completely untrue for me” and 4 = “perfectly true for me”. All items load on a single factor ($\alpha = 0.773$).

Participants

The present study, cross-sectional and quantitative in nature, was conducted on a sample of 460 participants, on whom data was collected and subsequently analysed and compared. The participants were all men in the custody of seven prisons in Romania, definitively sentenced to incarceration on the basis of convictions for violent crimes (such as attempted murder, murder, and manslaughter), sex crimes (such as rape and pedophilia), crimes related to drug trafficking and consumption, but also non-violent offenses (such as illegal tree cutting and driving without a license).

Data collection

Data collection was carried out between August 2021 and July 2022. The questionnaires were administered in a paper-and-pencil format, inside areas within the penitentiary facilities specially arranged for this purpose, and in compliance with the legal safety measures specific to the penitentiary environment set by the Romanian National Penitentiary Administration, as well as those imposed in the national and international context of the COVID-19 pandemic.

Data confidentiality and participants' anonymity

The study was designed in accordance with the Declaration of Helsinki (World Medical Association, 2013) and Romanian national laws regarding ethical conduct in scientific research. Authorization was obtained from the Ethics Commission of the Romanian Academy for this study as research conducted within the scope of doctoral training (no. 79/19.03.2021).

Cultural, individual, and role differences were respected, including those related to age, gender, race, ethnicity, culture, national origin, religion, sexual orientation, disability, language, and socio-economic status (The European Parliament and the Council of the European Union, 2016).

RESULTS

The age range of the sample was 21-65 years. 175 of the total participants were recidivists, with 37 having more than two prior convictions. The incidence of recidivism in the sample exhibits an increase in the age range between 21 and 40 years and a decrease between 41 and 60 years, followed by another increase from the age of 61 onward. These trends are visually presented in *Figure 1* below.

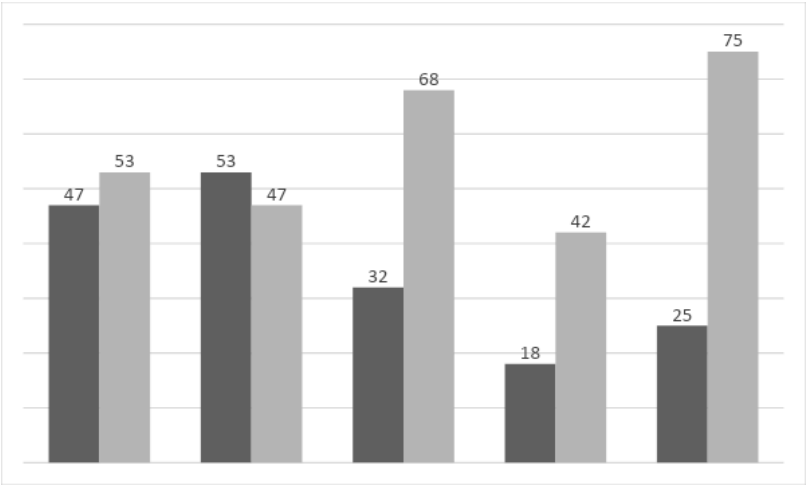

Figure 1. Recidivism according to age category

A *t*-test for independent samples has shown that recidivists' Machiavellianism scores are significantly higher than those of non-recidivists (t (458) = - 2.01, $p < .05$), whereas their social desirability scores are significantly lower than those of non-recidivists (t (458) = -3.56, $p < .01$). These results are presented in *Table 1*.

Table 1. Difference between recidivists and non-recidivists' mean scores for Machiavellianism and social desirability

Variable	recidivists		non-recidivists		*t* (458)	*p*	Hedges' *g*
	M	*SD*	*M*	*SD*			
Social desirability	99.9	12.91	104.3	12.92	-3.561	.004**	.34
Machiavellianism	81.91	11.61	78.15	10.30	-2.011	.03*	.34

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

A simple linear regression analysis revealed that 14% of the variation of social desirability scores is accounted for by Machiavellianism scores ($\beta = .12$, $p < .01$), F (458, 459) = 32.24, $p < .05$. At the same time, 27% of the variation of Machiavellianism scores is accounted for by self-efficacy scores ($\beta = .93$, $p < .05$), F (458, 459) = 25.11, $p < .05$. These results are presented in *Table 2.*

Table 2. Linear regression analysis scores – Machiavellianism and self-efficacy

Variable	R	R^2	R^2_{adj}	S.E.	β	p
Machiavellianism	.394	.140	.155	8.623	.12	.043*
Self-efficacy	.387	.270	.144	7.531	.93	.038*

*$p < .05$

Lastly, a Pearson correlation test identified a statistically significant association between self-efficacy and age ($r = .43$, $p < .05$). At the same time, age was found to correlate with conscientiousness ($r = .45$, $p < .05$) and social desirability ($r = .38$, $p < .05$). These results are presented in *Table 3*.

Table 3. Correlations identified between age and other variables

	Variable	*M*	*SD*	1	2	3	4
1.	Self-efficacy	92.3	10.6	-			
2.	Age	39.2	10.3	.433*	-		
3.	Conscientiousness	87.9	11.2	.28	.453*	-	
4.	Social desirability	102.7	12.5	.24	.387*	.29	-

*$p < .05$

DISCUSSION

The purpose of this research was to study the connection between personality traits such as Machiavellianism, self-efficacy and social desirability among prison inmates, as well as their variability depending on age and whether an inmate is a recidivist or not.

Regarding the differences between recidivists and non-recidivists, it is not surprising that recidivists scored higher for Machiavellianism on average, considering that cunning, manipulation, and unscrupulous behaviour are key elements in the career of a criminal (Faigher, 2019). Additionally, significantly lower mean social desirability scores were obtained for recidivists. A possible explanation of this finding is recidivists' greater indifference, or even contempt towards social norms (Bejan, 2009), as reflected by their recidivism itself.

The relationship found between Machiavellianism as a predictor and social desirability as a criterion is consistent with Machiavellian individuals' inclination to manipulate those around them. In the specific case of this study, the desire of the respondents to present themselves in a favourable light, as reflected by their social desirability scores, can be furthermore attributed to the insecurity of the environment in which the questionnaires were filled out. Indeed, as a penitentiary facility is a space in which personal privacy is

diminished and which is pervaded by mistrust (Gheorghe, 2001), incarceration is liable to influence the veracity of surveyed inmates' responses.

Pilch (2008) notes that although Machiavellianism is often considered to be associated with exceptionally high levels of interpersonal skills, which allow Machiavellians to manipulate others, the results of his research did not support this idea. The present work, however, shows that at least in the case of incarcerated adult men, greater presence of self-efficacy will be accompanied by stronger Machiavellianistic tendencies. This finding is consistent with the results of a previous study on 200 public sector employees in Lahore, which highlighted self-efficacy as a significant positive predictor of Machiavellianism (Zaman & Qayyum, 2019).

The present study has also revealed a significant positive correlation between age and self-efficacy. Similar results have been obtained in research conducted on unemployed individuals from the general population (Albion et al., 2005; Maddy, 2013), but not in research on samples of prison inmates. For example, the positive correlation between age and self-efficacy identified here is not consistent with results published by Laferrière and Morselli (2015), who found that the self-efficacy of prison inmates tends to decrease as they grow older. Brezina and Topalli (2012) note a similar trend in their sample, in which lower levels of self-efficacy were recorded among older inmates. As a tentative explanation, they suggest that older inmates may tend to perceive delinquency and success as incompatible (Brezina & Topalli, 2012). However, it should be noted that both studies assessed criminal self-efficacy in particular, which is a different variable than the overall self-efficacy assessed in the present study. Thus, the positive correlation between age and self-efficacy identified here, which stands in opposition to the results of previous research on prison inmates but is aligned with the results of previous research on the general population, could be ascribed to the fact that the questionnaire used in the present study was designed to assess self-efficacy in general.

Regarding conscientiousness, its significant correlation with age identified in the present study is in agreement with Borghans et al.'s (2008) claim that certain personality traits such as conscientiousness tend to exhibit a steady increase until late adulthood. Finally, the positive correlation between age and social desirability may reflect a deeper internalisation of traditional values and social norms by older inmates (Dijkstra et al., 2001, as cited in Nicolini, Abbate, Inglese, Mari, Rossi & Cesari, 2021).

CONCLUSIONS

Our review of the specialised literature has not turned up previous studies focused on the relationship between Machiavellianism and social desirability in persons deprived of liberty, a gap which the present study has attempted to fill.

The results have confirmed the first hypothesis, as recidivists presented a higher Machiavellianism score and a lower social desirability score than non-recidivists within the sample. This finding suggests that Machiavellianism could be a potentially important variable when it comes to recidivism, which is one of the indicators of ineffective social reintegration process.

The second hypothesis has been confirmed by the finding that 27% of the variation of Machiavellianism scores is accounted for by self-efficacy scores. Thus, within the population under study, self-efficacy is favourable to manifestations of Machiavellianism. A possible explanation is that under incarceration, inmates gradually gain an increasing amount of confidence in their abilities, which encourages them to persist in deceptive, manipulative behaviour, for as long as necessary for their goals.

The third hypothesis has likewise been confirmed by the finding that 14% of the variation of social desirability scores is accounted for by Machiavellianism scores.

Regarding the last hypothesis, the results show that self-efficacy, social desirability and conscientiousness increase with age. Thus, an older person is expected to display a higher sense of self-efficacy compared to a younger person, which can be attributed to life experience. Age was also found to be positively correlated with social desirability and conscientiousness, both of which help inmates gain the trust of penitentiary staff, which is dependent upon their compliance with the rules and norms specific to the penitentiary environment.

The results of the present study are of practical relevance as insincere, manipulative behaviour on the part of prison inmates, whereby they attempt to present themselves favourably to penitentiary staff, impedes the identification of their needs and risks in terms of rehabilitation.

LIMITATIONS AND RECOMMENDATIONS

One limitation of this study are the assessment tools used, as they had been designed for research on the general population and were not suited to the specificities of the penitentiary environment. Additionally, the low level of education of some of the inmates surveyed could have prevented them from fully understanding the items on the questionnaire, such that the accuracy of the results obtained for them is questionable. It is therefore necessary to devise assessment tools better adapted to the prison population for future research.

Another limitation of this study is the fact that data were collected from only 7 out of over 40 penitentiary facilities in Romania, such that the results obtained cannot be extended to the entire population deprived of liberty in the country. It is therefore necessary for future studies to include respondents from a larger number of penitentiaries and ensure broader geographic coverage.

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PSYCHOMETRICS

UDC: 159.9.072

ON MEASURING HONESTY: THE CHALLENGES OF A PSYCHOMETRIC APPROACH TO A MULTIDIMENSIONAL CONSTRUCT

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Abstract. The aim of this research was to examine the psychometric characteristics of a self-reporting scale which measures honesty as a stable personality disposition. Positively, honesty can be defined as truth-orientation and realistic and authentic self-representation, while the negative definition describes it as the absence of manipulation. The multidimensionality of honesty is perceived in the subscales of the psychometric instruments, such as: beliefs about the frequency of dishonest behaviour in others; punitiveness towards dishonesty; awareness of other people's dishonest behaviour; projection of one's own dishonesty onto others; admitting dishonest conduct; temptations; rationalisations of dishonest behaviours. This study was conducted on Qualtrics, on a sample of 587 students from the biggest state university in R. Macedonia, of which female students were more numerous (70.10%) than male students and the largest number (46.7%) of the participants were seniors. The participants were answering the pilot-version of the newly developed Scale of Honesty Beliefs [SHB], the Conscientiousness scale (which includes Orderliness, Productivity and Responsibility) out of the Big Five [BFI-2] and also a scale of Five Trick-Questions [FTQ]. Two of the FTQ were control-questions and extremely easy, and three were experimental and extremely difficult. A sentence in the answer instructions stating that the following questions were "general knowledge" questions was inserted in order to tempt participants to cheat to portray themselves in a socially desirable light, as well-informed students. The Consciousness Scale was conducted to examine the external validity of the SHB (r = .187, p < .001), and the FTQ was conducted to examine the predictive validity of the SHB (r = .021; p = .258). An EFA was also conducted, after which five factors were extracted and treated as subscales. We tested the reliability of SHB (α = .773) and its subscales. The test has satisfactory psychometric characteristics (although further research is needed) and this research once again presented the challenges and confirmed the complexity of measuring multidimensional constructs, such as honesty.

Keywords: honesty; psychometrics; beliefs; validity; multidimensionality

INTRODUCTION

We can reach an agreement on a theoretical definition of honesty as "orientation towards the truth and honest (authentic) self-representation (absence of manipulation)" (Јанаков, 2018, p. 325). Peterson and Seligman (2004) developed a model with six character virtues, each with several character qualities. In this regard, honesty along with passion,

persistence and courage are character traits that describe the virtue of boldness. (Корубин, 2015).

However, empiricist researchers will agree that an equally important challenge is the definition of the manifestation of honesty, that is, adequate operationalization. Historically, the polygraph was a pioneering instrument in measuring honesty, registering the psychological changes that occur in parallel with the psychological tension generated by lying. An honest individual was considered the one who, when answering questions, did not experience significant physiological changes. Alarming research findings showing that the cost of internal (from the employees) theft to US businesses is about 40 million dollars per year (Palmiotto, 1983, as cited in Martin, 1989) have cleared the need for a more sophisticated instrument.

Honesty began to be measured with self-report psychological instruments thanks to Lee Betts, who created the Biographical Case History (BHC) during World War II as the first instrument of this nature (Ash & Maurice, 1988). (Dis)honesty was detected through the consistency in presenting information about one's biography. Later Betts, along with Russell N. Kassel, created the Life Experience Inventory (LEI), which turned out to have better psychometric instruments, so the trend of measuring honesty with psychometric "tools" continued.

A second challenge soon arose: it became clear to the scientists that it is unjustifiable to conceptualise honesty as a unidimensional construct. This has been confirmed in previous research. Thus, four factors were extracted from the London House Personnel Selection Inventory (PSI) test (London House Management Consultants, 1975): 1) temptations and ruminations regarding dishonest behaviours; 2) admissions of dishonest acts; 3) beliefs about the frequency with which other individuals commit dishonest acts; and 4) honesty-related personality traits (such as trustworthiness and impulsiveness) (Nicol & Paunonen, 2002). A factor analysis of The Raid Report (Raid, 1967) also indicated that four factors were extracted: 1) Punitiveness Toward Others; 2) Punitiveness Toward Self and Relations; 3) Projection of Honesty for Self; and 4) Projection of Dishonesty to Others (Ash & Cunningham, 1988). The two analyses overlap in certain domains, but also differ significantly in describing honesty. How is it possible that two instruments that are claimed to measure the same construct cover relatively similar, yet different subdimensions?

Other psychometric instruments that measure honesty contain different subscales than those listed. For example, The Work Productivity Questionnaire (WPQ) (Nicol & Paunonen, 2002) contains six subscales: 1) Admissions; 2) Attitudes; 3) Perceptions of Others; 4) Punitiveness; 5) Rationalizations; 6) Temptations. The Phase II Profile (Moore & Stewart, 1989) consists of six subscales: 1) Thinks; 2) Rationalizes; 3) Bad Attitudes; 4) Minor Admissions; 5) Major Admissions; 6) Good Attitudes.

Additional circumstance that is complicating the measurement of honesty is the fact that there is extremely little evidence of the extent to which different types of items are truly underlying the same construct. Although there is abundant evidence for the multidimensionality of instruments that measure honesty, some questions remain. The literature shows that in order to measure honesty, we must first "break it down" into smaller parts i.e. in different indicators that manifest it. Is it wise to lump these smaller parts together and call them "honesty"? Isn’t it wiser, instead of claiming to measure honesty (which is overly complex), to measure some indications of it, for which acceptable psychometric properties have already been obtained? (Nicol & Paunonen, 2002). Namely, honesty is multidimensional not only in terms of its "structure", but also in terms of the variability of its manifestation (e.g. through cheating/copying, through stealing, lying, manipulating, etc.). More specifically, not always and every dishonest action necessarily means possessing

dishonesty as a personal disposition. A frequent argument to illustrate the moral relativity of honesty is the fact that sometimes people lie to avoid the greater harm that might result from telling the truth. (Perkins & Turiel, 2007). This points to the cautionary conclusion that if some set of items refer to certain types of dishonest behaviours, then their differential predictive ability may be lost when added together with items that do not so successfully predict the particular type of behaviour. So, it is desirable for the psychometrician researcher to determine in advance what will be the criterion for dishonest behaviour for him or her – will it be lying, copying, stealing, being late, etc. Thus, the aforementioned WPQ predicts both cheating and stealing well, while The Phase II Profile predicts only stealing (Nicol & Paunonen, 2002).

On the other hand, there are strong arguments that these honesty tests should not be discarded. First, research shows that job applicants find the use of these types of tests appropriate (Ryan & Sackett, 1987). Second, although the difficulty of establishing adequate criterion measures is a common problem in honesty test validation research, any new way of testing predictive validity can be counted as further evidence of the test's usefulness (Harris & Sackett, 1984). Thirdly, in conditions where there are a large number of interested candidates and a small number of jobs or student quotas and similar positions, honesty tests can serve as another means of selection or recruitment and will provide insight into the personal integrity of the potential participants in the organisation.

The development of the Scale of Honesty Beliefs [SHB]

Considering the alarmingly high massive cheating during exams by students in higher education institutions, cheating by high school students, as well as the mentioned frequent stealing by workers from the labour organisation, it is necessary to develop an instrument that can predict the risk of future dishonest behaviour. For this purpose, a pilot version of the Scale of Honesty Beliefs [SHB] was created, which contains items covering some of the above-mentioned aspects of honesty, such as beliefs, trust, rationalisation, and punitiveness. However, other aspects of honesty are excluded (such as admitting dishonest behaviour in the past, admitting experienced temptations for dishonest behaviour, etc.) for at least two reasons. Firstly, it is an extremely complex procedure to control socially desirable responses. Secondly, it is easily recognizable which construct do those kinds of items measure and therefore it is more likely for the participants to modify their responses. Hence, the variable measured by this instrument was chosen to be named "Honesty Beliefs" and not just "Honesty" - the stated aspects of honesty were deliberately excluded in the formation of the scale's items. The development of the items is discussed elsewhere (Богдановска, 2022). The pilot version counts 30 items that are answered on a Likert scale of agreement from 1 to 5. A higher score on the scale indicates more positive beliefs about self and others related to the possession of honesty as a personality trait and vice versa. This version was given to a small random stratified sample of psychology students at the State University "Ss. Cyril and Methodius" in Skopje, Macedonia (Богдановска, 2022). It turned out that the reliability of the SHB is good (α = .778), as well as the divergent validity for which the Machiavellianism (Dark Triad of Personality [D3]) scale from the Dark Triad by Paulhas (2013) was assigned (r = -.357; p < .001). As for the external validity, for which the Conscientiousness scale of the Big Five (Big Five Inventory – 2 [BFI-2], John & Soto, 2016) was assigned, discussable results were obtained. Namely, SHB was statistically significantly related to the Responsibility sub dimension of Conscientiousness (r = .273; p < .05), but not to the entire Conscientiousness scale (r = .156; p > .05).

The purpose of this research is to examine the psychometric characteristics of the SHB. The research includes item analysis, reliability testing, and examination of the convergent and divergent validity. The current version counts 30 items that are also answered

on a Likert scale of agreement from 1 to 5. The lowest score a participant can obtain is 30 and the highest is 150. A higher score indicates more positive beliefs about honesty and vice versa. The item structure of the SHB can be viewed in *Appendix 1*.

Initial research on the validity of honesty tests shows that these tests correlate positively with the Conscientiousness factor of the Big Five (also known as the Five Factor Personality Model) from Costa and McCrae (1992). In particular, a high correlation was found with the sub dimension Responsibility (as cited in Rogers, 1994), which is explained by a sense of duty of the individual and the tendency to admit wrongdoing in the name of "cleaning one's cheek" (Ones, Schmidt & Visweswaran, 1994, as cited in Rogers, 1994). Other research on the validity of honesty tests shows that the results of asking difficult general information questions in conditions of provided opportunity to cheat are a good indicator of predictive validity of an instrument that measures honesty (Hugh-Jones, 2015). Finally, it is a commonsense assumption that if the participants search for the correct answers on Google, the duration of participation in the research will be prolonged.

Considering the direction of the discussion so far, three hypotheses were set. Hypothesis 1: As conscientiousness increases, the belief in honesty increases. Hypothesis 2: As cheating increases, the belief in honesty decreases. Hypothesis 3: As cheating increases, the duration of the participation in the research increases.

METHOD

Participants

587 students from 20 faculties of the State University "Ss. Cyril and Methodius" in Skopje, Macedonia took part in this research, with the largest number of participants being students from the Faculty of Information Sciences and Computer Engineering (26.6%), and the least numerous being students from the Faculty of Dramatic Arts and the Faculty of Pharmacy (each with 0.20% participation). Fourth year students participated the most, with 46.7%, and first year students the least, with 11.4%. Females were more numerous with 70.10% representation, and males less numerous with 29.90% representation. For a more detailed overview of the sample, *Table 1* can be viewed.

Table 1. Structure of the sample according to sex, year and field of study ($N = 586$)

Baseline characteristic	*n*	%
Gender		
Male	175	29.9
Female	411	70.1
College study year		
First year	67	11.6
Second year	77	13.3
Third year	160	27.7
Fourth year	274	47.4
Faculty		
Faculty of Architecture	37	06.3
Faculty of Civil Engineering	14	02.4
Faculty of Economics	11	01.9
Faculty of Mechanical Engineering	10	01.7
Faculty of Medicine	114	19.5
Faculty of Pedagogy	17	02.9

Faculty of Law	32	05.5
Faculty of Natural Sciences and Mathematics	56	09.6
Faculty of Dentistry	3	.5
Faculty of Technology and Metallurgy	13	02.2
Faculty of Furniture and Interior Design	4	.7
Faculty of Dramatic arts	1	.2
Faculty of Electrical Engineering and Information Technologies	14	02.4
Faculty of Information Sciences and Computer Engineering	156	26.6
Faculty of Fine Arts	2	.3
Music Academy	24	04.1
Faculty of Physical Education, Sports and Health	3	.5
Faculty of Pharmacology	1	.2
Faculty of philosophy	53	9
Faculty of philology	21	03.6

Measurement instruments for examining validity

The Conscientiousness scale of the BFI-2 (John & Soto, 2016) counts 12 self-reporting statements, for which the total score was calculated with a simple sum of the points obtained by answering a Likert scale from 1 (strongly disagree) to 5 (strongly agree). The instrument also has six reverse items, which were scored from 1 (completely agree) to 5 (completely disagree). The scale counts three subdimensions: Orderliness, Productivity and Responsibility. The reliability of this scale is α = .83. The item structure can be seen in *Appendix 2*. This scale was created in order to examine the external validity of the SHB.

For the purposes of this research, Five Trick-questions were devised and presented to the participants as "general knowledge questions". Two of the FTQs are controlled – these are extremely easy questions [EQ] and the answers are widely known to the student population. Three of the FTQs are experimental – these are extremely difficult questions [DF] and the answers are not well known to either the student or the general population. FTQs can be viewed in *Appendix 3*. What is specific about the DQ is that although the answers are not well known to the typical population, they are very easily accessible – the person is only one Google search away from the answer – it literally appears on the first page by searching the keyword. FTQs were assigned in order to assess the predictive validity of the SHB.

Procedure

Representatives-acquaintances of the researcher were selected from all the faculties and helped her to get in touch with the student groups. In each group from each faculty, a call for participation in research was published in which the scientific value of the research was emphasised. At the end of the posts, the link from the research was placed. All students participated voluntarily by answering Qualtrics instruments and the participation was fully anonymous.

In the first block of questions, demographic data were requested from the participants, such as sex, faculty where they study and year of study. In the second block, FTQs were assigned. Due to the well-known desire of research participants to present themselves in a socially desirable light, ways were sought to hinder this opportunity, which would push students into taking dishonest actions to present themselves ideally at any cost. To this end, the FTQs answer guide stated that the questions were indicators of the "general knowledge" of the students. Such a procedure was done with the intention of causing temptation among

the students to copy the answers due to the desire to present themselves as people with a broad general knowledge. In the third block, the SHB and the Conscientiousness scale were administered in parallel as if they were the same instrument. At the end, gratitude was expressed for the participation.

Participants who left more than 20% of the fields unanswered were removed from the total data. For those who left less than 20% of the fields unanswered, empirical average scores were imputed. Missing data from the FTQ was counted as not knowing the answer.

RESULTS

Descriptives for SHB (N = 587) show that the minimum obtained score was 50, and the maximum score was 127, with M = 91.21; SD = 11.91. A test of the normality of the distribution showed that the distribution of SHB was normal, with slight negative skewness (= -.09) and slight kurtosis (= .234).

Regarding the FTQs, the frequencies and percentages of answering the questions were analysed. Thus, in terms of EQ, out of N = 587, most participants or 44.3% of them answered one question correctly, followed by students who did not answer any question correctly or 28.1% of them and finally both questions were answered correctly by 27.6% of the students. Regarding the DQ of N = 587, the most participants or 77.5% of them did not answer any question correctly, and the least students or 4.3% answered correctly two of the questions. The results of all descriptive statistics are presented in *Table 2*.

Table 2. Descriptive statistics for the measurement instruments

	Min	*Max*	*M*	*SD*	Skewness	Kurtosis
Scale of Honesty Beliefs	50	127	91.21	11.91	-.090	.234
Conscientiousness Total	24	60	42.01	6.74	.008	-.003
Orderliness	4	20	14.53	2.65	-.241	.189
Productivity	5	20	13.44	2.75	-.131	.091
Responsibility	7	20	14.00	2.66	.116	-.490

Cronbach's Alpha statistic for the SHB is α = .811. The analysis (*Table 3*) shows that it is not recommendable for any item to be excluded from the SHB in order to increase the reliability, so considering their discriminative ness and the fact that none of them violates the reliability, all the proposed items can be kept in the final version on the test. The scale contains items which are of medium difficulty, as well as relatively difficult and relatively easy items. Item 26 with M = 2.03 is the statement with which the participants expressed the least agreement, while item 1 with M = 4.46 is the statement with which the participants expressed the most agreement of all the items of the SHB. As for discriminability, all items correlate with the total score of the SHB, statistically significant at the $p < .001$ level. Item 1 has the lowest correlation with the total score, which is r = .231; $p < .001$, while item 27 has the highest correlation, which is r = .604; $p < .001$. For a detailed overview of the descriptive data for each item on the SHB, see *Table 3*.

Table 3. Item analysis of the initial version of the SHB

Item	*M*	*SD*	Correlation with SHB	Reliability of SHB if item is excluded
Item 1	4.46	.659	.231**	.810
Item 2	2.43	1.051	.518**	.800
Item 3	3.74	1.035	.298**	.810
Item 4	2.72	1.092	.558**	.798
Item 5	2.16	1.148	.398**	.806
Item 6	2.65	1.053	.384**	.806
Item 7	3.98	.820	.283**	.809
Item 8	2.94	1.010	.478**	.802
Item 9	2.99	1.016	.431**	.804
Item 10	3.52	1.078	.326**	.809
Item 11	2.38	.980	.374**	.806
Item 12	2.64	1.040	.326**	.809
Item 13	3.98	.823	.287**	.809
Item 14	3.63	1.141	.323**	.810
Item 15	2.67	1.115	.340**	.809
Item 16	2.61	1.220	.533**	.800
Item 17	2.49	1.069	.426**	.804
Item 18	2.36	.896	.331**	.808
Item 19	2.78	1.093	.384**	.806
Item 20	2.69	1.145	.461**	.803
Item 21	4.24	.789	.276**	.809
Item 22	2.10	.923	.327**	.808
Item 23	3.22	1.102	.546**	.799
Item 24	2.79	1.157	.414**	.805
Item 25	4.10	.798	.329**	.808
Item 26	2.03	.915	.337**	.808
Item 27	3.09	1.097	.604**	.796
Item 28	4.05	.809	.353**	.807
Item 29	2.63	1.111	.273**	.812
Item 30	3.21	.974	.526**	.800

* = statistical significance at the level of .05
** = statistical significance at the level of .01

For examining the internal structure of the SHB, an exploratory factor analysis was conducted with the Principal Components method, using the Varimax factor rotation. An unrotated factor solution was selected, and Eigenvalues were observed (more information can be found in *Table 4*). However, factors were extracted based on Parallel analysis for EFA using O'Connor's syntax. The Kaiser-Meyer-Olkin statistic shows the suitability of the data for using factor analysis (*KMO* = .83), so as the Bartlett's test (= 5305.13; $p < .001$).

The data analysis based on Eigenvalues indicates a seven-factor structure of the test, which explains 55.542% of the variance. PA suggests a five-factor structure - only factors with eigenvalue of 1.33 or more should be retained. The details about the factors and the percentage of the variance they explain can be seen in *Table 4*. This factor structure includes

a different number of items in a different factor. The factor loadings of each item individually for each factor can be viewed in Appendix 4.

Table 4. Initial and Random Eigenvalues of the SHB's factors

Factor	Principal Component Analysis: Initial Eigen-values			Parallel Analysis: Random Data Eigenvalues			Offered number of items for the factor	Items that would contain the factor
	Value	% of Variance	Cumulative %	Root	Means	Percentile		
1	5.155	17.183	17.183	1.000	1.445	1.496	7	2 4 8 17 23 27 30
2	3.723	12.408	29.591	2.000	1.383	1.418	3	22 26 29
3	2.515	8.383	37.974	3.000	1.340	1.376	3	21 25 28
4	1.718	5.725	43.700	4.000	1.302	1.332	6	6 9 13 15 19 24
5	1.317	4.389	48.089	5.000	1.266	1.293	4	5 12 14 20
6	1.193	3.975	52.064	6.000	1.233	1.260	4	10 11 16 18
7	1.044	3.479	55.542	7.000	1.203	1.227	2	1 7

Following PA's suggestions, it was decided to extract 5 factors instead of 7. The factors are named as:

1) *Projection of Honesty (professional context)* –. Dishonest people are expected to view others as dishonest and vice versa - honest people perceive honesty in others too. A high score on this factor indicates perceiving other people as honest in terms of their professional success;

2) *Punitiveness Towards Dishonest Behaviours (university context)* - Dishonest people are expected to be more lenient when suggesting punishment for other people's transgressions, while honest people to be more severe. A high score on this factor indicates severity in punishing others. Items in this factor are of limited applicability - they can only be given to students/academics;

3) *General (Dis)trust in people* - People who trust others more are expected to be more honest. A higher score on this factor indicates greater general trust in others;

4) *Rationalisation by Violation of Moral Values* – If a person shows a tendency to justify violation of moral values, it is expected that he/she will also be violating moral values. A higher score on this factor indicates a lower tendency to justify violating moral values with rationalisations;

5) *Rationalisation (university context)* - If a person shows a tendency to justify dishonest behaviours, it is expected that the person will behave dishonestly. A higher score on this factor indicates a lower tendency to justify dishonest behaviours with rationalisations. Items in this factor are of limited applicability - they can only be given to students/academics;

Four items (item number 3, 11, 14 and 15) do not have the necessary minimum for saturation (.40) on any of the factors. Also, some of the items do not have the necessary

minimum (.40) for their communalities (item 3, 11, 15 and 17). Therefore, they will be excluded from the new version of the SHB. Given the results from the PA, the items from the last two factors, extracted by eigenvalue criteria, will also be excluded from the new version (these are item 1, 7, 10, 16 and 18). The mentioned changes affect the reliability of the instrument, but it does not drop drastically (α = .773). For a more detailed overview of which factor is saturated by which items, Appendix 5 can be seen. For an insight into the structure of each factor separately, *Table 5* can be viewed.

Table 5. Factor structure

Factor	Items	Factor saturation	Descriptive statistics of factor		Reliability	
			M	SD	Factor	If item is excluded
Factor 1 Projection of Honesty (professional context)	2R	.792	14.87	4.295	α=.900	.884
	4	.793				.882
	8R	.778				.888
	23	.814				.881
	27	.829				.878
	30	.811				.882
Factor 2 Punitiveness Towards Dishonest Behaviour (university context)	22	.902	6.76	2.554	α=.829	.687
	26	.910				.673
	29	.710				.931
Factor 3 General (Dis)trust in people	21	.811	12.39	1.970	α=.767	.652
	25	.775				.680
	28	.757				.727
Factor 4 Rationalization by Violation of Moral Values	6R	.792	15.20	3.243	α=.616	.504
	9R	.754				.517
	13	.423				.594
	19R	.421				.582
	24R	.426				.604
Factor 5 Rationalization (university context)	5R	.707	7.48	2.395	α=.532	.439
	12R	.661				.411
	20R	.566				.445

Items which communalities are lower than .40: 3, 11, 15 and 17
Items that don't saturate any factor more than .40: 3, 11, 14 and 15
Items that are excluded by suggestion of the PA: 1, 7, 10, 16 and 18

Testing of the hypotheses for the validity of the SHB

Regarding the validity of the SHB, research hypothesis 1 is confirmed. It was found that as the belief in honesty increases, so does conscientiousness (r = .187; p = .001). SHB is statistically significantly related to the subdimensions Responsibility (r = .262; p = .001) and Productivity (r = .139; p = .001), while there is no statistically significant correlation with the sub dimension Orderliness (r = .068; p = ,114). Research hypothesis 2 was not confirmed. No

statistically significant correlation was obtained between the SHB scores and the DQ scores from the FTQs (r = .021; p = .258). For an overview of the correlations of the SHB and all factors with the Conscientiousness scale, its subdimensions and the DQ of the FTQs, *Table 6* can be viewed. Research hypothesis 3 was confirmed. A statistically significant correlation was obtained between the number of correctly answered DQ and the duration of the participation in the survey (r = .081; p = .025).

Table 6. Correlations of SHB and its subdimensions with Conscientiousness and its subdimensions as well as with DQ from FTQs

	Total SHB	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	DQ	Cons. BFI-2	Resp. Cons.	Order. Cons.	Prod. Cons.
Total SHB *without 1, 3, 7, 10, 11, 14, 15, 16, 17, 18*	1										
Factor 1: *2, 4, 8, 23, 27, 30*	**.617****	1									
Factor 2: *22, 26, 29*	**.405****	**-.134)****	1								
Factor 3: *21, 25, 28*	**.432****	**.098****	**.102****	1							
Factor 4: *6, 9, 13, 19, 24*	**.653****	**.112****	**.165****	**.232****	1						
Factor 5: *5, 12, 20*	**.589****	**.193****	**.224****	.034	**.274****	1					
Difficult Questions	.021	-.067	**.148****	-.013	.049	-.026	1				
Conscientiousness	**.187****	-.041	**.101****	**.244****	**.213****	**.108****	**.193****	1			
Responsibility	**.262****	.006	**.106****	**.235****	**.296****	**.167****	**.163****	**.819****	1		
Orderliness	.068	-.058	.053	**.209****	**.077***	**.004**	**.129****	**.808****	**.454****	1	
Productivity	**.139****	-.048	**.092***	**.172****	**.160****	**.100****	**.186****	**.870****	**.594****	**.569****	1

** Correlation is significant at the .01 level
* Correlation is significant at the .05 level

DISCUSSION

Honesty is an important personality disposition, and all efforts invested in finding ways to construct valid and reliable instruments that would "detect" it are of utmost importance to scientific psychology. It is becoming increasingly clear that honesty is one of the central personality traits, as evidenced by the newly constructed personality tests which, in addition to the commonly known five factors, also include honesty. Such instruments are

the six-factor HEXACO-PI, as well as The Questionnaire Big Six Scales [QB6] (Thalmayer, Saucier & Eigenhuis, 2011).

It can be concluded that the SHB has good psychometric characteristics. It has high reliability, and it has been shown that the SHB measures a different construct than Machiavellianism (Богдановска, 2022). This finding, which was obtained on the pilot version of the SHB, is consistent with previous research that found honesty to be negatively correlated with negative valence, which includes negative self-concept and a manipulative social approach style (Međedović, Čolović, Dinić & Smederevac, 2017). We also saw that the SHB measures a construct which is significantly correlated to Conscientiousness from the BFI-2, as well as with its subdimensions Productivity and Responsibility. The latter is consistent with previous findings suggesting that the measure of honesty actually represents a measure of intrinsically deepened conscientiousness, because that disposition encompasses trustworthiness, attentiveness, and responsibility (Ones, Viswesvaran & Schmidt, 1993). Previous research has also found a statistically significant association between the Conscientiousness scale and tests of honesty (Rogers, 1994; Lee & Ashton, 2016). It can be concluded that the external and divergent validity of the SHB are satisfactory.

The hypothesis set to test the predictive validity in this research was not confirmed. It is interesting to note that although it is low, the correlation between the participation duration in the research and the number of correctly answered DQ from FTQs is statistically significant. One explanation for the extended time required could be the participants' Google search for the correct answer. However, the latter contradicts previous research that has found that dishonesty is related to impulsivity. People are more dishonest when they are pressured to answer quickly than when they have an unlimited time for answering (Shalvi, Eldar & Bereby-Meyer, 2012). In the given study, participants did not have a time limit for answering, but the DQ answers show that a significant proportion of them chose to cheat anyway. Perhaps participants would be creative in coming up with justifications for the cheating in this study, but no such data is currently available. Regarding the FTQs, the EQ that were set as control-questions will be discussed first. Although it was obtained that only 27.6% of the participants answered both questions correctly, the fact that 189 participants gave a wrong but identical answer to the first EQ must be mention, which indicates that even though they did not know the correct answer (and obviously faced the same hesitation), they did not cheat. The latter is important because a correct answer was expected. The hypothesis of the predictive validity of the SHB was not confirmed, but there are many arguments for the claim that one should not jump to the conclusion that the validity of the test is problematic: 1) The number of DQ was only three, which does not allow conditions for a more detailed statistical analysis of the data; 2) Even if the number of DQ was higher, these questions were given without prejudging whether they were really extremely difficult – the extreme difficulty of the questions was arbitrarily attributed, without prior checking; 3) It is unlikely that the statement that the questions examine general knowledge among students signifantly aroused the motivation to cheat, especially if we consider the facts that each respondent answered anonymously, did not receive a reward for correctly answered questions, and the results of the test were not of personal importance to him/her; 4) Although the questions are called "general knowledge" questions, all five refer to Macedonian cinematography, which means that they measure knowledge related to a narrow (and not general) topic; 5) Even if the aforementioned obstacles were overcomed, the responses to the FTQ would still be indicators of cheating only - the predictive validity of the SHB could also apply to lying, stealing, harming, etc. which are not taken into account in this research.

This research was generally distinguished by several other shortcomings. First of all, it must be acknowledged that the present attempt to measure predictive validity was not

successful. The data proves the latter: not only do DQs not correlate negatively with SHB, but they correlate *positively* with Factor 2, and with Conscientiousness (as well as with all three of its subdimensions). Secondly, no control was ensured in the administration of the survey – participants filled out the instruments online, in uncontrolled conditions. Furthermore, there may be a systematic difference in responses between people who participated in this study and people who would answer the SHB in real-life conditions, when answering would be of personal importance. Also, the sample on which the research was conducted is not representative and, moreover, there are significantly more female participants than there are male participants.

It should be noted that the factors are named according to the author's subjective assessment of the superordinate dimension under which the items can be placed. The question remains whether it is justified to "put all the factors under the same umbrella" of honesty, to treat it as a single variable. Thus, Factor 1, which explains the largest percentage of the variance, does not correlate with DQ, nor with Conscientiousness and its subdimensions, while Factor 2 *positively* correlates with DQ. The latter can be explained by the previously mentioned omissions of DQ, and it once again brings out the necessity to examine predictive validity in more detail and to devise indicators of other types of dishonest behaviour in further research. What's more, Factor 1 and Factor 2 are *negatively* correlated with each other, which can be interpreted as another argument against the attempt to measure one "honesty-super variable".

As for the items contained in the SHB, after the analyses in this research, ten items were excluded for reasons previously discussed. The new version of the SHB counts 20 items and 5 subscales. It can be concluded that, despite the above-mentioned shortcomings and the way in which the predictive validity was examined, the SHB should not be thrown out of use, but on the contrary, ways should be found for a more detailed examination of its validity. It is recommended that in future research, in addition to cheating, other criteria for (dis)honest behaviour, such as lying, stealing, manipulating, being late, etc., should be set. (Ones, Viswesvaran & Schmidt, 1993; Sackett & Harris, 1984). If the next researcher still decides to focus exclusively on cheating, it is advisable to increase the number and check the difficulty of the DQ in advance. There is also a lack of information as to whether the SHB will prove successful in measuring honesty as a stable disposition or in predicting specific behaviours that tend to be independent subdimensions of honesty (Burton, 1963).

The final conclusion of this research is that although the scale has satisfactory reliability, is distinct from Machiavellianism, and is significantly related to Conscientiousness, the examination of predictive validity was unsuccessful. It is recommended not to use the scale until its predictive validity has been further tested. If a researcher or practitioner still decides to apply to the SHB, it is recommended that they do not do so in situations where they have to make a serious decision about the people who will complete the scale, as well as to administer this scale together with other tests of honesty/integrity. One particular advantage of this research is that psychometric properties are tested on a student population, which previous meta-analyses have shown to produce the most valid responses (Jones & McDaniel, 1988).

Although the complexity of measuring honesty, as well as the multidimensionality of this construct, was once again confirmed, we must not forget that for now we do not have a more valid instrument for measuring honesty than self-reporting psychological instruments. As Ash and Maurice (1988, p. 379) put it:

"Ask a man if he is honest or not; in our confessional society he will tell you. The honest man delights in the opportunity to assert his virtue. The dishonest man assuages his guilt by believing that "others do it, too," and it is, after all, "normal" to be dishonest. Much

more often than not, he will confess to his untrustworthiness on a paper-and-pencil honesty test."

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APPENDICES

Appendix 1. Items of the pilot-version of SHB (Богдановска, 2022) – original and translated

- Original:

1. Крадењето треба строго и доследно да се казнува.
2. Во Република Македонија НЕ може да се успее без врски. R
3. Подобро е да се работи чесно и за мала плата отколку да се добие незаслужена позиција која е високо платена.
4. Во Република Македонија НЕ може да се успее без корупција и подмитување. R
5. На факултет се учат многу непотребни предмети чија содржина никогаш нема да се примени. R
6. Во ред е човек во специфичните и/или екстремните ситуации да постапи различно од неговите морални вредности. R
7. Мамењето треба строго и доследно да се казнува.
8. Во Република Македонија НЕ може да се успее без непотизам. R
9. Не е страшно ако човек повремено постапува спротивно на неговите морални вредности – важно е главно да се придржува кон нив. R
10. Во бизнис-светот може да се просперира и без валкани игри и експлоатирање.
11. Воглавно НЕ може да им се верува на луѓето. R
12. НЕ е многу мудро да се троши време во учење на непотребни предмети. R
13. Кога од човек се бара да постапи спротивно од неговите морални вредности, тој треба да се спротивстави и да го одбие таквото барање.

14. Студентите кои на дело се фатени како препишуваат или се обидуваат да препишат на тест треба да се санкционираат со забрана за полагање на предметот најмалку една испитна сесија.
15. НЕ е страшно ако повремено човек се провлече и не плати возен билет во јавен превоз.R
16. Имајќи ги предвид нечесните државни вработувања, НЕ може да се очекува од студентите да усвојат вредности како чесност и правичност. R
17. Правичните луѓе секогаш го извлекуваат најдебелиот крај. R
18. Воглавно луѓето прават нечесни дела за да ги постигнат замислените цели. R
19. Подобро е да се земе случајно најдена банкнота од 100 денари на јавен простор отколку залудно да се бара сопственикот. R
20. Ако природата на полагањето дозволува, не е страшно неважните предмети да се положат со снаоѓање. R
21. Верувам дека чесноста е основа на довербата меѓу луѓето.
22. Секој студент кој забалежал препишување од страна на некој колега/колешка има морална и студентска обврска да го пријави кај надлежниот професор.
23. Во Република Македонија може да се успее и без врски.
24. Понекогаш е подобро и поисплатливо да си го сочувам менталното здравје и да постапам некоректно како мнозинството, отколку да останам сам/а со своите фрустрации и ништо да не променам кон подобро. R
25. Верувам дека чесноста е основа за стабилност на интерперсоналните врски.
26. Секој студент кој забалежал препишување од страна на некој колега/колешка има морална и студентска обврска да го пријави кај надлежниот професор, па дури и да се работи за пријател или друга блиска особа.
27. Во Република Македонија може да се успее и без корупција и подмитување.
28. Верувам дека чесноста е основен темел на кој се потпира здравото општество.
29. Секој студент кој препознал содржина со плагијатура во семинарски или дипломски труд на колега/колешка има морална и студентска обврска истата да ја пријави.
30. Во Република Македонија може да се успее и без непотизам.

Translated:

1. Theft should be strictly and consistently punished.
2. In the Republic of Macedonia, one CAN NOT succeed without making connections with powerful people. R
3. It is better to work honestly and for a small salary than to get an undeserved position that is highly paid.
4. In the Republic of Macedonia, one CAN NOT succeed without corruption and bribery. R
5. At university, many unnecessary subjects are taught, the content of which will never be applied in practice. R
6. It is okay if a person acts differently from his/her moral values in specific and/or extreme situations. R
7. Cheating should be strictly and consistently punished.
8. In the Republic of Macedonia, one CAN NOT succeed without nepotism. R
9. It's not terrifying if a person occasionally acts contrary to his moral values – what's important is to mainly adhere to them. R

10. In the business world one can prosper without dirty games and exploitation.
11. People are generally NOT to be trusted. R
12. It is NOT very wise to waste time learning unnecessary subjects. R
13. When a person is asked to act contrary to his moral values, he/she should resist and refuse such a request.
14. Students caught in the act of copying or attempting to copy a test should be sanctioned by being banned from taking the exam for at least one exam session.
15. It is NOT terrifying if a person occasionally slips by and does not pay a ticket in public transport. R
16. Considering undeserved government employments, students can NOT be expected to adopt values such as honesty and justice. R
17. People that are fair always end up the worst. R
18. People in general do dishonest deeds to achieve the intended goals. R
19. It is better to take a randomly found 100 denars banknote in a public space than to look for the owner in vain. R
20. If the exam conditions allow, it is not terrifying to pass the unimportant subjects with cheating. R
21. I believe that honesty is the basis of trust between people.
22. Any student who noticed a cheating by a colleague has a moral and student obligation to report it to the professor.
23. In the Republic of Macedonia, one can succeed even without making connections with powerful people.
24. Sometimes it is better and wiser to preserve my mental health and act incorrectly like the majority, than to stay alone with my frustrations and not change anything for the better. R
25. I believe that honesty is the basis for the stability of interpersonal relationships.
26. Any student who notices a cheating by a colleague has a moral and student obligation to report it to the professor, even if that colleague is a friend or any kind of close person.
27. In the Republic of Macedonia, one can succeed even without corruption and bribery.
28. I believe that honesty is the basic foundation upon which a healthy society rests.
29. Any student who recognizes plagiarized content in a colleague's seminar or graduate paper has a moral and student obligation to report it.
30. In the Republic of Macedonia, one can succeed even without nepotism.

*R = reverse item

Appendix 2. Items of the Conscientiousness (Big Five Inventory – 2 [BFI-2], John & Soto, 2016)

1) I am someone who tends to be disorganized. R
2) I am someone who tends to be lazy. R
3) I am someone who is dependable, steady.
4) I am someone who is systematic, likes to keep things in order.
5) I am someone who has difficulty getting started on tasks. R
6) I am someone who can be somewhat careless. R
7) I am someone who keeps things neat and tidy.
8) I am someone who is efficient, gets things done.
9) I am someone who is reliable, can always be counted on.
10) I am someone who leaves a mess, doesn't clean up. R
11) I am someone who is persistent, works until the task is finished.
12) I am someone who sometimes behaved irresponsibly. R

*R = reverse item

Table 7. Structure of items of the subdimensions of the Conscientiousness scale from BFI-2

Conscientiousness		
Orderliness	Productivity	Responsibility
1R 4 7 10R	2R 5R 8 11	3 6R 9 12R

*R = inverse item

Appendix 3. Five Trick-Questions: Easy Questions and Difficult Questions

1. What is the name of the first Macedonian documentary film that was nominated for an Oscar?
• Correct answer: Honeyland
2. In which year was the Macedonian actress Bedija Begovska born?
• Correct answer: 1951
3. In which city was the actor Petar Mirchevski born?
• Correct answer: Krushevo
4. Who is the director of the famous Macedonian film "Before the rain"?
• Correct answers: Milcho Manchevski; Milcho; Manchevski
5. What is the name of the wife of the Macedonian writer and playwright Goran Stefanovski?
• Correct answers: Pat Marsh; Patricia Marsh; Pat; Patricia; Marsh

*Questions number 1 and 4 are EQ and Questions number 2, 3 and 5 are DF

Appendix 4. Factor saturations for each item of SHB

Items	Factor saturation						
	1	2	3	4	5	6	7
Item 1							.816
Item 2 R	.792						
Item 3							
Item 4 R	.793						
Item 5 R					.707		
Item 6 R				.792			
Item 7							.685
Item 8 R	.778						
Item 9 R				.754			
Item 10						.552	
Item 11 R							
Item 12 R					.661		
Item 13			.412	.423			
Item 14							
Item 15 R							
Item 16 R	.401					.446	
Item 17 R	.420						
Item 18 R						.584	
Item 19 R				.421		.408	
Item 20 R					.566		
Item 21			.811				
Item 22		.902					
Item 23	.814						
Item 24 R				.426			
Item 25			.775				
Item 26		.910					
Item 27	.829						
Item 28			.757				
Item 29		.710					
Itrem 30	.811						

Extraction method: Principal Component Analysis.
Rotation method: Varimax with Kaiser Normalisation
Factor saturation under .40 are not shown

Appendix 5. Factor structure of the SHB

- Factor 1 - **Projection of Honesty (professional context)**
  - 2: In the Republic of Macedonia, one CAN NOT succeed without making connections with powerful people. R
  - 4: In the Republic of Macedonia, one CAN NOT succeed without corruption and bribery. R
  - 8: In the Republic of Macedonia, one CAN NOT succeed without nepotism. R
  - 23: In the Republic of Macedonia, one can succeed even without making connections with powerful people.
  - 27: In the Republic of Macedonia, one can succeed even without corruption and bribery.
  - 30: In the Republic of Macedonia, one can succeed even without nepotism.
- Factor 2 - **Punitivness Towards Dishonest Behaviors (university context)**
  - 22: Any student who noticed a cheating by a colleague has a moral and student obligation to report it to the professor.
  - 26: Any student who notices a cheating by a colleague has a moral and student obligation to report it to the professor, even if that colleague is a friend or any kind of close person.
  - 29: Any student who recognizes plagiarized content in a colleague's seminar or graduate paper has a moral and student obligation to report it.
- Factor 3 – **General (Dis)trust in people**
  - 21: I believe that honesty is the basis of trust between people.
  - 25: I believe that honesty is the basis for the stability of interpersonal relationships.
  - 28: I believe that honesty is the basic foundation upon which a healthy society rests.
- Factor 4 – **Rationalization by Violation of Moral Values**
  - 6: It is okay if a person acts differently from his/her moral values in specific and/or extreme situations. R
  - 9: It's not terrifying if a person occasionally acts contrary to his moral values – what's important is to mainly adhere to them. R
  - 13: When a person is asked to act contrary to his moral values, he/she should resist and refuse such a request.
  - 19: It is better to take a randomly found 100 denars banknote in a public space than to look for the owner in vain. R
  - 24: Sometimes it is better and wiser to preserve my mental health and act incorrectly like the majority, than to stay alone with my frustrations and not change anything for the better. R
- Factor 5 - **Rationalization (university context)**
  - 5: At university, many unnecessary subjects are taught, the content of which will never be applied in practice. R
  - 12: It is NOT very wise to waste time learning unnecessary subjects. R
  - 20: If the exam conditions allow, it is not terrifying to pass the unimportant subjects with cheating. R

- Items that will be excluded from the SHB:
  - 1: Theft should be strictly and consistently punished.
  - 3: It is better to work honestly and for a small salary than to get an undeserved position that is highly paid.
  - 7: Cheating should be strictly and consistently punished.
  - 10: In the business world one can prosper without dirty games and exploitation.
  - 11: People are generally NOT to be trusted. R
  - 14: Students caught in the act of copying or attempting to copy a test should be sanctioned by being banned from taking the exam for at least one exam session.
  - 15: It is NOT terrifying if a person occasionally slips by and does not pay a ticket in public transport. R
  - 16: Considering undeserved government employments, students can NOT be expected to adopt values such as honesty and justice. R
  - 17: People that are fair always end up the worst. R
  - 18: People in general do dishonest deeds to achieve the intended goals. R

CREATION OF A SHORT MEASUREMENT OF SELF-DISGUST

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Abstract. Self-disgust is a face of disgust, a core emotion, directed against the core self traits that are constant or not easily changed. In itself self-disgust can be adaptive and maladaptive in nature. We have decided to and succeeded in creating a short scale, only four items, that measures the facet of self-disgust directed only at the personality of the individual, not the body image as was the case up until now. Across four samples of student and general populations of 1192 participants we have tested the structure using exploratory and confirmatory factor analysis and found that it holds. Also we measured other significant constructs along with the scale and found that the relationship with them is what we have come to expect with regards to the existing literature. The scale remains to be further tested in various diverse samples to further show its validity and used on the clinical population to determine its predictive power of various clinical entities.

Keywords: self-disgust, disgust, scale creation

INTRODUCTION

Disgust is a diverse, multifaceted emotion that evolved from a disease avoidance mechanism (Oaten, Stevenson, & Case, 2009). Rooted around the need to avoid stimuli that are supposed to be bad for the individual many situations in life can elicit the feeling of disgust, some of them are physical attributes of an individual, animal secretions, unsanitary environment, atypical sexual behavior, socio-moral violations and many other stimuli (Rozin, Haidt, & McCauley, 1999).

Disgust is a multifaceted emotion. First attempts to operationalize and measure it came up with a seven domain scale (Haidt, McCuley, & Rozin, 1994) including food, animals, body products, sex, envelope violations, death, hygiene and magic. The factor structure of this scale was not stable and the theory behind it was in a constant state of flux so an alternative was proposed in the form of a three factor structure of disgust (Oltunji, Haidt, McKay, & David, 2008). This factor instability has been shown also in the Serbian adaptation where none of the factors could have been properly isolated (Rokvic, Jovanovic, & Tomasevic, 2020). In response an alternative, adaptationist view of disgust has arisen (Tybur, Lieberman, & Griskevicius, 2009) that divides disgust into three subdomains pathogen, sexual and moral. Each of these defends the individual from a form of harm, pathogen from infection, sexual from possible infections and other consequences of sexually risky behavior such as incest, and moral defends the individual and his/her group by condemning antisocial behavior or behavior that is not in the interest of the group (Tybur, Lieberman, Kurzban, & DeScioli, 2012).

Self-disgust is an emotion when a part of the core self, be it personality, body image, self-perception or similar is found disgusting by that individual. The emotion is a theoretically and empirically separated concept from shame, self-hatred and self-contempt

(Powell, Simpson, & Overton, 2015). The authors also define self-disgust as a self-focused internalisation of an otherwise adaptive disgust response. Many features of the self might elicit self-disgust; it is important to understand that not every form of self-disgust is dysfunctional (Powell, Simpson, & Overton, 2015). At its core the authors believe that self-disgust is inexorably connected to what is socio-culturally determined as repulsive and ensues when what is perceived as self has aspects that fall within the spectrum of the socio-culturally repulsive. To further clarify Powell et al (2015) insist that the dysfunctionality of self-disgust stems from the fact that the maladaptive variation of the phenomenon is enduring and repetitive disgust reaction to the specific parts of the self that are perceived as constant, significant to the individual's identity and are deemed constant or not easily changeable.

The clinical manifestations and implications of self-disgust are numerous (Clarke, Simpson, & Varese, 2019) including its relationship with depression, body-image difficulties and trauma related difficulties. There is an established relationship with the Dark Triad and emotional regulation (Akram & Stevenson, 2021). Self-disgust has been also found to be a potential mechanism that explains the relationship between loneliness and depression (Yipsilanti, Lazarus, Powell, & Overton, 2019) and also as a potential mechanism underlying the association between body image disturbance and suicidal thoughts and behaviors (Akram, et al., 2021). On a related note self-disgust has been deemed one of the key factors in the severity and relapse of anorexia nervosa (Glashouwer & de Jong, 2021). Again Self-disgust was found to mediate another clinically important relationship, that between dysfunctional cognitions and depressive symptomatology (Overton, Markland, Simpson, Taggart, & Bagshaw, 2008). Self-disgust has been found to have a relationship with sleep disorders although mediated by anxiety and depression (Yipsilanti, Lazarus, Rpbinson, & Akram, 2018). Also the aforementioned emotion can mediate the relationship between childhood adversities and psychosis (Sipson, Helliwell, Varese, & Powell, 2020). Neuro-anatomically speaking self-disgust is connected to the decrease in grey matter volume in the part of the brain called the insula, bilaterally (Schienle & Wabnegger, 2019).

Currently the most used instrument in measuring self-disgust is the Self Disgust Scale (Overton, Markland, Simpson, Taggart, & Bagshaw, 2008) an 18 item instrument measuring moth body image and cognitive aspect of self-disgust. It is the aim of this study to create a short measure of self-disgust based only on the cognitive element of the emotion that might be more suitable for clinical application because of its shortness.

Study 1

METHOD

The sample in this survey was gathered via an internet survey that circulated freely on social networks, shared by users on their profiles and on various groups. The survey consisted of several instruments that are not relevant to this study and out of selected six items that were to form the Self-disgust scale. The purpose of this sampling was to conduct exploratory factor analysis to determine the selected, newly created, all aligned in one factor or several. The sample consisted out of 328 participants out of them 233 (71%) registered themselves to be female. The average age of the participants was 34.01 (min=18; max=70; SD=9.44). With regards to educational status 1 (.3%) participant only has a grade school diploma, 49(14.9%) have high school diplomas, 205 (62.5%) have graduate or master level diplomas, 18 (5.5%) have PhD level education and 55(16.8%) are students. With regards to employment 215

(65.5%) are permanently employed, 44(13.4%) are precariously employed, 20(6.1%) are unemployed, 4(1.2%) are pensioners and 45(13.7%) are students.

Short Self-disgust scale (SSDS) is a four-item questionnaire focusing on the feeling of self-disgust. Answers are reported on a five-point Likert scale, ranging from I disagree to I completely agree. A sample statement is: "When I think about my life I feel disgusted by everything". Internal consistency for this sample was good, achieving Crombach's alpha values of .88.

RESULTS

We have performed exploratory factor analysis and found only one component that explains 64.65% of the variance (KMO=.776; χ^2(df)=564.554(6); sig.<.001). Individual item loadings can be found in Table 1. There are no gender differences in self-disgust scores. The average SSDS score is 1.8 (min=1; max=5; SD=.93). There is a weak negative correlation between age and self-disgust (r=-.21; sig.<.01).

Table 1. Factor loadings of items in exploratory factor analysis in study 1.

Item	Component 1
I have become a disgusting person.	0.868
When I think about my life I feel disgusted by everything.	0.834
Some of my personality traits are disgusting to me.	0.823
I feel dirty and disgusting because of some of the things I have done.	0.784

Study 2

The purpose behind this sample is to further validate the structure of the SDS and to determine its relationship to basic psychological needs and other structures in the auspices of the Self-Determination theory, The sample consisted out of 372 students, out of them 254 (68.3%) declared themselves as female. The average age of the surveyed population was 20.25 (min=18; max=25; SD=1.78). The survey was conducted via the internet. We performed confirmatory factor analysis and correlation. We used the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) in order to determine the goodness of fit. For both indexes we considered values of at least 0.90 to indicate an acceptable model fit, while values of 0.95 and above represent a good solution (Bentler, 1990; Tucker & Lewis, 1973). The last two parameters we used were the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) where models with lower AIC and BIC are considered to be indicators of better model fit (Akaike, 1987; Schwarz, 1978).

Short Self-disgust scale (SSDS) is a six item questionnaire focusing on the feeling of self-disgust. Answers are reported on a five point Likert scale, ranging from I disagree to I completely agree. A sample statement is: "When I think about my life I feel disgusted by everything". Internal consistency for this sample was good, achieving Crombach's alpha values of .87.

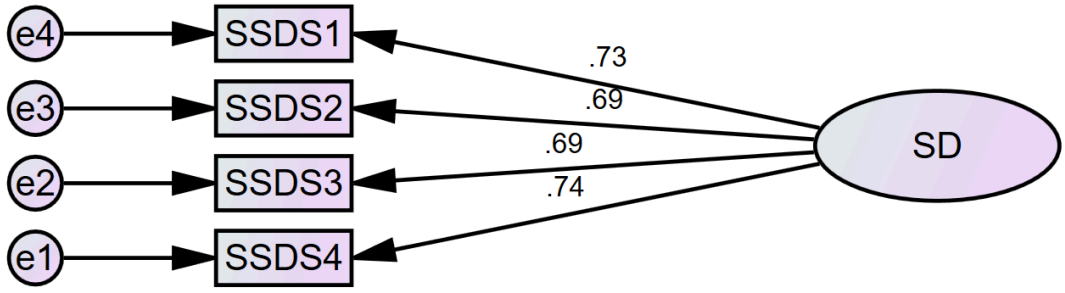
Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS; Chen, et al., 2015) is a 24 item stale that consists out of six subscales denoting the satisfaction and frustration of a basic psychological need as defined by the Self-Determination Theory. These are autonomy satisfaction (item example " I feel that my decisions reflect what I really want") and frustration (item example "Most of the things I do feel like "I have to""), relatedness satisfaction ("I feel that the people I care about also care about me") and

frustration (item example “I feel excluded from the group I want to belong to”) and competence satisfaction (“I feel capable at what I do”) and frustration (“I feel insecure about my abilities”). The internal consistency is good, measuring alpha values of .67, .8, .81, .79, .82 and .85 respectively. The responses are registered on a five point scale. The scale has been successfully translated and adapted in the Serbian language (Šakan, 2020).

Subjective Vitality Scale (SVS; Bostic, McGartland, Rubio, & Hood, 2000) is a short scale measuring subjective vitality defined as energy at the disposal of the ego. This definition is also under the umbrella of the Self-Determination Theory. It consists of six items, and the responses are registered on a seven point scale. The instrument is one-dimensional (example item “I feel alive and full of vitality”). The internal consistency of the scale was good with an alpha value of .81. The scale was translated and successfully adapted to the Serbian language (Šakan, Očovaj, & Roković, 2021).

RESULTS

The average score of the SSDS is 2.07 (min=1; max=5; SD=.99). There are no significant differences between genders in the SSDS score. We have performed confirmatory factor analysis. The confirmatory factor analysis parameters were as follows χ^2(df)=7.425(2); sig.=.024, as for fit compatibility indices the CFA was .988, TLI was .963, AIC was 23.425 and BIC was 54.777. Graphical model is represented in graph 1, with individual item loadings. Correlations between measured constructs can be found in table 2.



Graph 1. Confirmatory factor analysis model from Study 2

Table 2. Correlation coefficients between constructs measured in study 2 and the Short Self-disgust Scale

	Short Self-disgust Scale
Autonomy satisfaction	-.24**
Autonomy frustration	.44**
Relatedness satisfaction	-.28**
Relatedness frustration	.41**
Competence satisfaction	-.33**
Competence frustration	.58**
Subjective vitality	-.36**

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

Study 3

This sample was collected to test the relationship of the new measure of Self-disgust with parameters of psychological distress and dark personality and to retest the relationship between Self-disgust and other gestures of disgust on a larger and different sample. The sample consisted only of students, 216 in total and out of them 183 (84.7%) declared themselves as female. The average age of the participants was 22.83 (min=18; max=33; SD=3.14). These were students of humanities and social sciences. The sample was collected via the internet (Google form) and circulated only on student groups. The survey consists of several tests.

Short Self-disgust scale (SSDS) is a six item questionnaire focusing on the feeling of self-disgust. Answers are reported on a five point Likert scale, ranging from I disagree to I completely agree. A sample statement is: "When I think about my life I feel disgusted by everything". Internal consistency for this sample was good, achieving Crombach's alpha values of .87.

Disgust Propensity and Sensitivity scale (DPSS, Fergus & Valentiner, 2009) is a 12 item scale consisting out of two subscales Disgust Propensity and Disgust Sensitivity. Each subscale consists of six items (example Disgust Propensity items "I avoid disgusting things"; example of Disgust Sensitivity items "It scares me when I feel faint."). Answers are registered on a five point Likert scale. The scale was successfully adapted to the Serbian language (Roković, 2020). The internal consistency of both scales was good with alpha values of .78 and .79 respectively.

Dark triad dirty dozen (DTDD; Jonason & Webster, 2010) is a short 12 item scale measuring the dark triad, Machiavellianism, psychopathy and narcissism. Each subscale consists of four items ("I tend to manipulate others to get my way.", "I tend to lack remorse", "I tend to wand others to admire me" respectively). The scale was successfully adapted and validated into the Serbian language (Dinic, Petrovic, & Jonason, 2018). The answers are registered on a five point Likert scale. The internal consistency measured by Crombah's alpha was 0.84, 0.7 and 0.8 for each of the subscales respectively.

Positive and Negative Affect Scale X (PANAS X; Watson, Clark, & Tellegen, 1988), is a 20 item scale measuring positive and negative affect. In our research we have only used the negative affect subscale that consists out of 10 items, single nouns that describe how the participant is feeling (for example "guilt"). The questionnaire has been successfully translated into the Serbian language (Mihic, Novovic, Colovic, & Smederevac, 2014). The answers are registered on a five point Likert scale. The internal consistency of the subscale was favourable with an alpha value of 0.9.

Depression Anxiety and Stress Scale 21 (DASS21; Lovibond & Lovibond, 1995) is a 21 item scale, consisting out of three subscales representing Depression, Anxiety and Stress. Each of the subscales has seven items ("I couldn't seem to experience any positive feelings at all.", "I was aware of dryness of my mouth", "I found it hard to wind down" representative items of Depression, Anxiety and Stress subscales). The scale was successfully translated in the Serbian language and further validated (Jovanović, Gavrilov-Jerković, Žuljević, & Brdarić, 2014). The answers are registered on a 4 point Likert scale. The scale can be used in subscales and as a summary score of psychological distress. The internal consistency of both solutions is good 0.94 as a complete score and 0.82, 0.84 and .8 as separate scores.

RESULTS

The average score of the SSDS in this sample was 1.97 (min=1; max=5; SD=.97). There is no significant difference between ganders in the SSDS scale values.

Table 3. Correlations between measured constructs in study 3 and Self-disgust

	Self-disgust
Disgust Sensitivity	.28**
Disgust Propensity	-
Negative affect	.59**
Depression	.63**
Stress	.48**
Anxiety	.51**
Machiavellianism	.26**
Psychopathy	.32**
Narcissism	.23**

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

Study 4

This sample was collected to further demonstrate the construct stability of the Short Self-disgust Scale and to determine its relation with more different constructs such as subjective wellbeing, emotional flexibility, relational identity and self-esteem. The sample consisted out of 376 participants, out of them 276 (73.4%) declared themselves to be female. The average age of the participant was 33.73 years old (min=18; max=65; SD-8.92). The survey was conducted online via Google forms, and it was circulated over social media networks by users freely. Regarding employment 61 (16.2%) participants were students, 234 (62.2%) were fully employed, 44 (11.7%) were precariously employed, 36 (9.6%) were unemployed and 1 was a pensioner (.3%). Concerning education 52 (13.8%) were students, 45 (12%) had finished high school, 258 (68.6%) have finished graduate or master level studies and 21 (5.6%) have finished PhD level studies. The survey consisted of several instruments.

Short Self-disgust scale (SSDS) is a six item questionnaire focusing on the feeling of self-disgust. Answers are reported on a five point Likert scale, ranging from I disagree to I completely agree. A sample statement is: "When I think about my life I feel disgusted by

everything". Internal consistency for this sample was good, achieving Crombach's alpha values of .89.

Satisfaction with life scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a five item scale that measures life satisfaction when compared in one criterion of life success (item example "I am satisfied with my life"). The answers are registered on a five item Likert scale. It was successfully adapted to the Serbian language (Vasic, Sarcevic, & Trogrlic, 2011). Internal consistency, as measured by Crombach's alpha, was good with a value of .8.

Acceptance and Action Questionnaire 7 (AAQ7; Heyes, et al., 2004) is an instrument consisting of seven items measured as a single construct (example item "I am afraid of my emotions"). The scale is a measure of emotional flexibility, and the answers are registered on a seven point Likert scale. The instrument was successfully adapted to the Serbian language (Žuljavić, Rakočević, & Krnetić, 2020). Internal consistency of the instrument was excellent with an alpha value of .91.

The Rosenberg Self-esteem Scale (RSS; Rosenberg, 1965) the scale consists out of ten items, five of them are reverse coded (example "On the hole I am satisfied with myself.") measuring self-esteem. Answers are registered on a four point scale. The internal consistency of the scale was good with an alpha value of .85. The scale was successfully used in the Serbian language (Schmitt & Allikj, 2005).

RESULTS

We have used the same benchmarks for model fit indices as in the previous studies. The average values of the SDS score in this sample was 1.68 (min=1; max=5; SD=.82). There are no gender differences detected that are of statistical significance. Correlations between measured constructs in study 4 are presented in table 4. There is a significant correlation between age and SDS values ($p<.01$) with an r value of -.24.

Table 4. Correlation coefficients between constructs measured in study 4 and the Self-disgust Scale.

	Self-Disgusts Scale
Satisfaction with Life Scale	-.34**
Acceptance and Action Questionnaire 7	.53**
Rosenberg Self-Esteem scale	-.57**

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

DISCUSSION

In the first sample we attempted to isolate the items needed for the scale. It was fortunate that all the four items we have chosen to represent self-disgust highly on one factor so that no further addition of items and iterations were necessary. The internal consistency was also good so we proceeded to use the scale in another sample in order to determine the construct's validity via utilisation of confirmatory factor analysis. Also we chose a student sample rather than a general population sample in order to see if the scale will maintain its structure on different samples. The structure held and has shown excellent metrics. At this point we were satisfied with the structure of the scale and proceeded to discover its correlations with other measured constructs across different samples.

We have not found any literature that connected the Self-determination theory of motivation with self-disgust as a personality trait or emotional schema, therefore we have

decided to test the relationship. We expected that given the clinical nature of self-disgust (Clarke, Simpson, & Varese, 2019), or better said its detrimental effect on an individual that we will see negative relations with needs satisfaction and positive with needs frustration, and we were not disappointed. All frustration subscales of the scale correlated strongly with self-digest, especially competence frustration that reached an r value of .58. This leads us to believe that self-disgust frustrates psychological needs of an individual much more than it decreases their satisfaction for one, and that self-disgust manifests itself most strongly as a feeling that an individual does not possess the competences needed to achieve their goals. Therefore if we view self-disgust as revulsion against a core aspect of the self (Powell, Simpson, & Overton, 2015) we can see that on a cognitive level it frustrates the individual ability to excel at the level of competence the most, making the individual feel a lack of autonomy in their life because they are self-disgusted and that those traits that make them feel so about themselves frustrate their ability to connect with their environment, to create satisfying relationships with their group. Also the feeling of self-disgust decreases the general feeling of vitality, energy placed at the disposal of the ego.

Next we proceeded to discern the relationship between existing disgust measures in the Serbian language like the DPSS and other measures of clinical interest pertaining to psychological distress such as depression, stress, negative and anxiety coupled with the dark triad. With regards to the dark triad somewhat against the existing literature (Akram & Stevenson, 2021) we have found small but significant correlation between all traits, Machiavellianism, Narcissism and Psychopathy, unlike literature findings that found no trace of correlation with Narcissism. We believe this is because of the nature of the scale used, our scale focuses on the cognitive aspect while the used SDS scale focuses on the body image as much as on the cognitive aspect of self-disgust. This is precisely why we believe we should construct our scale so that we can more finely tune the difference between body image related self-disgust and ego/self related self-disgust. We now see that there is a touch of Narcissism in the equation not seen before and that should be further explored in depth in up summing studies. Strong relationship with psychotically distress comes as no surprise to us, given the connection with pathological symptoms elaborated upon in the introduction and only further corroborates that we are on the right track in creating this scale. What puzzles us a bit is the fact that there is no significant relationship between self-disgust and disgust propensity while only a weak one with disgust sensitivity. This, in a way, corroborates the postulate by Powell at all (2015) that self-disgust is a socially determined maladaptive response, that does not have much to do with disgust as a personality trait and propensity for such reactions as such, but that it is dominated social and cultural conditions where the individual is raised and their key life events.

Finally, we have tested the relationship of our novel measure of self-disgust with self-esteem and found an expected negative correlation, and the expected negative impact of self-disgust levels on life satisfaction. Also we have found that a development of self-disgust feelings involves a small degree of emotional rigidity. All of these relationships and their implications and possible moderating roles between self-disgust and other constructs have to be further tested, this is in fact only a pilot study for our new scale.

CONCLUSION

All of our results indicate that the Short Self-Disgust Scale is a promising short, practical new instrument to measure a particular facet of self-disgust pertaining to the

relationship to the core self. We strongly further research on the matter and other researchers to test the validity of the scale on various samples including the clinical population.

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Appendix I

Short Self-Disgust Scale – Serbian

Stavka	Ne slažem se				Slažem se
Kada razmislim o svom životu zgadi mi se sve	1	2	3	4	5
Zbog nekih svojih postupaka osećam se prljavo, odvratno	1	2	3	4	5
Postao/la sam odvratna osoba.	1	2	3	4	5
Neke moje osobine su mi odvratne.	1	2	3	4	5

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UNIVERSITY OF NIŠ

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Proofreading
Ivana Pedović & Miloš Stojadinović

Technical Editorial Office
Ana Jovančević (Cover Design)
Darko Ranđelović (Technical Editing)
Irena Veljković (Digital Publishing)

Format
170 x 240 mm

Print Run
50 CDs

Press
Faculty of Philosophy, University of Niš

Niš, 2023

ISBN 978-86-7379-641-3