

Osjetljivost na potkrepljenje i mentalno zdravlje

/ Reinforcement Sensitivity and Mental Health

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Teorija osjetljivosti na potkrepljenja postulira tri bihevioralna motivacijska sustava u podlozi stabilnih obrazaca ponašanja: bihevioralni inhibicijski sustav (BIS), bihevioralni aktivacijski sustav (BAS) i sustav borbe ili bijega (BBBS). BIS i BBBS koče ponašanja koja bi mogla biti ugrožavajuća za organizam pa se njihova osjetljivost povezuje sa sklonošću doživljavanju neugodnih emocija. BAS je pak ključan za ponašanja pristupanja okolini s ciljem pribavljanja resursa potrebnih za preživljavanje i reprodukciju, no recentna istraživanja pokazuju da se unutar ovih motivacija treba dodatno razlikovati četiri komponente: postavljanje cilja (BAS_w), planiranje i započinjanje nužnih aktivnosti koje vode cilju (BAS_g), upornost u postizanju cilja (BAS_p) te uгода kad je cilj postignut (BAS_s). Cilj ovog istraživanja bio je provjeriti na koji su način ove različite komponente povezane s mjerama mentalnog zdravlja uključujući različite oblike anksioznosti (socijalna, tjelesna, svakodnevna i anksioznost u novim situacijama) i depresivnost. Provedeno je online istraživanje na 446 odraslih sudionika (272 žene) ($M_{dob}=34$; $SD=12$). Rezultati regresijskih analiza pokazuju da komponente teorije osjetljivosti na potkrepljenja značajno doprinose objašnjenju različitih oblika anksioznosti i depresivnosti. Najveći doprinos u svim modelima pokazuje sustav inhibicije ponašanja, koji je dosljedno povezan s višim razinama anksioznosti i depresije, potvrđujući njegovu ključnu ulogu u obradi prijetnje i izbjegavanju negativnih ishoda. Sustav ponašajne aktivacije, osobito BAS_p komponenta, pokazuje zaštitni učinak. Suprotno tome, komponente BAS_w i BAS_s su u nekim slučajevima pozitivno povezane s depresivnošću, što može ukazivati na frustriranu motivaciju. Reaktivni sustav straha pokazuje selektivne učinke pri čemu je važniji za svakodnevnu anksioznost i depresivnost nego za socijalnu anksioznost. Nalazi mogu imati implikacije za psihološke intervencije usmjerene na regulaciju motivacije i emocionalnih reakcija.

/ The Reinforcement Sensitivity Theory posits three behavioral motivation systems that underly stable behavioral patterns: the behavioral inhibition system (BIS), the behavioral approach system (BAS), and the fight-flight-freeze system (FFFS). The BIS and FFFS inhibit behaviors that may pose a threat to the organism, therefore their sensitivity is associated with a greater propensity to experience negative emotions. Conversely, the BAS is central to approach behaviors aimed at acquiring resources essential for survival and reproduction, however recent studies have shown that four components should be further distinguished within these motivations: goal-setting (BAS_w), planning and initiating goal-directed actions (BAS_g), persistence in goal pursuit (BAS_p), and pleasure derived from goal attainment (BAS_s). The aim of this study was to examine the relationships between these components and mental health measures, including multiple forms of anxiety (social, somatic, daily, and anxiety in new situations) and depressive symptoms. An online survey was conducted, involving 446 adult participants (272 women) ($M_{age}=34$, $SD=12$). The results of regression analyses indicated that the components of Reinforcement Sensitivity Theory significantly contribute to explaining the variance in different forms of anxiety and depression. The behavioral inhibition system was revealed as the biggest contributor to all models, consistently associated with higher levels of anxiety and depression, thus confirming its pivotal role in threat processing and avoidance of negative outcomes. The behavioral approach system, particularly the BAS_p component, demonstrated a protective effect. In contrast, the BAS_w and BAS_s components were, in some cases, positively associated with depressive symptoms, suggesting the presence of frustrated motivation. The reactive fear system exhibited selective effects, being more relevant for everyday anxiety and depression than for social anxiety. These findings carry potential implications for psychological interventions targeting motivation and emotional response regulation.

ADRESA ZA DOPISIVANJE /**CORRESPONDENCE:**

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Prema Grayu, emocije i motivacija usko su povezane i djeluju urođenim neurobiološkim sustavima koji omogućuju prilagodbu pojedinca na zahtjeve okoline (1-3). Teorija osjetljivosti na potkrepljenja (TOP; engl. *Reinforcement Sensitivity Theory*, RST) predlaže postojanje dvaju temeljnih sustava koji reguliraju ponašanje: bihevioralno inhibicijskog sustava (BIS) i bihevioralno aktivacijskog sustava (BAS) – te dodatno, u revidiranoj verziji teorije (2) i zasebnog sustava borbe/bijega/blokiranja (BBBS; engl. *Fight-Flight-Freeze System*, FFFS).

Bihevioralno aktivacijski sustav se aktivira u prisutnosti nagrade ili odsutnosti kazne te potiče ponašanja usmjerena prema cilju. Neuroanatomski se povezuje s dopaminergičkim putevima koji uključuju nukleus akumbens, ventralno tegmentalno područje i orbitofrontalni korteks (4,5). Ovaj je sustav osjetljiv na uvjetovane pozitivne podražaje stvarajući pozitivnu povratnu petlju koju aktivira prisutnost nagrade. Posljedično, njegova aktivacija rezultira svojevrsnom energizacijom ponašanja, traženjem noviteta i pozitivnim afektom.

Suprotno tome, bihevioralni inhibicijski sustav osjetljiv je na signale kazne, neizvjesnosti ili sukobe između približavanja i izbjegavanja te aktivira anksioznost i povećava pažnju prema

INTRODUCTION**Reinforcement Sensitivity Theory**

According to Gray, emotions and motivation are closely interconnected and operate through innate neurobiological systems that enable individuals to adapt to environmental demands (1-3). The Reinforcement Sensitivity Theory (RST) proposes the existence of two fundamental systems that regulate behavior: the behavioral inhibition system (BIS) and the behavioral approach system (BAS) – and additionally, in the revised version of the theory (2), a separate fight-flight-freeze system (FFFS).

The behavioral approach system is activated in the presence of reward or the absence of punishment, promoting goal-directed behaviors. It is neuroanatomically associated with dopaminergic pathways that include the nucleus accumbens, the ventral tegmental area, and the orbitofrontal cortex (4, 5). This system is sensitive to conditioned positive stimuli, creating a positive feedback loop triggered by the presence of reward. Consequently, its activation results in a sort of energization of behavior, novelty-seeking, and positive affect.

In contrast, the behavioral inhibition system is sensitive to signals of punishment, uncertainty, or approach-avoidance conflict, activating anxiety and increasing attention toward potential threats. Its activation is linked to the septo-hippocampal circuit and serotonergic

potencijalnim prijetnjama. Njegova je aktivacija povezana sa septo-hipokampalnim krugom i serotonergičkom aktivnošću (2,6). Aktivacija BIS-a vodi prema opreznosti, povećanoj procjeni rizika, detekciji uvjetovanih neugodnih podražaja te u širem kontekstu, ruminacijama i pasivnim strategijama suočavanja.

Sustav BBBS posebno reagira na neposredne prijetnje i odgovoran je za reakcije straha i obrambenog ponašanja. Povezan je s aktivacijom limbičkog sustava i moždanog debla, a evolucijski je najstariji sustav, ključan za preživljavanje (7).

Grayova revizija RST-a (2000) ističe da BIS ne reagira samo na kaznu, već ponajprije na konflikt između približavanja i izbjegavanja čime posreduje procese odlučivanja u nesigurnim situacijama (8). Na primjer, društvene situacije koje uključuju potencijalno nagrađujuće, ali i riskantne ishode (npr. javni nastup) tipično aktiviraju BIS. Aktivacija BIS-a dovodi do razmišljanja o prošlosti, brige o budućnosti, eskalacije percepcije opasnosti i izraženijeg pasivnog izbjegavanja. Uloga koju sustav bihevioralne inhibicije ima u razrješavanju konflikata vezanih uz ispunjavanje ciljeva dovodi ga u usku vezu s osobinama neuroticizma i anksioznosti (9-11), što se također manifestira u obliku brige i ruminacija (12). Ujedno, bihevioralna je inhibicija biološki temelj mnogih kognitivnih pristranosti kao što su pristranost pamćenja, negativnih očekivanja i vjerovanja te precjenjivanje prijetnje (13-15).

Aktivacija BAS sustava se pak nalazi u podlozi impulzivnosti, traženja uzbuđenja i ekstrasverzije. Razlog tome je što se BAS aktivira podražajima koji su nam zanimljivi i općenito privlačni (npr. hrana, spolni partneri) (2,8). Unutar ovih približavajućih tendencija identificirano je nekoliko dimenzija. Corr i Krupić (16) su pokazali da se BAS može organizirati u četiri faktora nižeg reda: Htijenje (BAS-Wanting), Traženje (BAS-Seeking), Stjecanje (BAS-Getting) i Ugoda (BAS-Liking). Ove dimenzije

activity (2, 6). Activation of the BIS leads to cautious behavior, enhanced risk assessment, detection of conditioned aversive stimuli, and more broadly, rumination and passive coping strategies.

The fight-flight-freeze system (FFFS) is particularly responsive to immediate threats, and is responsible for fear responses and defensive behavior. It is associated with the activation of the limbic system and the brainstem, and represents the oldest system in terms of evolution, crucial for survival (7).

Gray's revision of the RST (2000) asserts that the BIS does not respond solely to punishment, but primarily to the conflict between approach and avoidance, thus mediating the decision-making processes in uncertain situations (8). For instance, social situations that involve potentially rewarding but risky outcomes (e.g. public speaking) typically activate the BIS. BIS activation leads to retrospection, worry about the future, heightened threat perception, and increased passive avoidance. The role of BIS in resolving goal-related conflicts links it closely to traits such as neuroticism and anxiety (9-11), which is also manifested as worry and rumination (12). Moreover, behavioral inhibition forms the biological basis for many cognitive biases, such as memory bias, negative expectations and beliefs, and threat overestimation (13-15).

BAS activation, on the other hand, underlies impulsivity, sensation-seeking and extroversion. This is due to the fact that the BAS is activated by stimuli that are inherently interesting or generally attractive (e.g. food, sexual partners) (2, 8). Within these approaching tendencies, several dimensions have been identified. Corr and Krupić (16) demonstrated that the BAS can be organized into four lower-order factors: Wanting (BAS_w), Seeking (BAS_s), Getting (BAS_g), and Liking (BAS_l). Different aspects of motivation are distinguished in these dimensions – from striving for achievement and

razlikuju različite aspekte motivacije – od težnje za postignućem i statusom (BAS_w), preko inicijativnosti i sklonosti istraživanju novosti (BAS_s), do ustrajnosti u ostvarivanju cilja (BAS_g) i emocionalne ugone nakon postignuća (BAS_l). Ove su dimenzije različito povezane s BIS-om, pa tako BAS_w korelira negativno, BAS_l pozitivno, dok BAS_s i BAS_g nisu povezani s BIS-om. S druge strane, drugi viši faktor Izbjegavajuća tendencija se sastoji od BIS i BBBS, a povezana je s neuroticizmom, negativnim afektom i osjetljivošću na kazne (17).

Kako se navedeni sustavi aktiviraju privlačnim, odbojnim ili konfliktnim podražajima i tendencijama, određena su se istraživanja usmjerila na njihovu povezanost sa psihopatologijom, konkretnije anksioznim i depresivnim stanjima.

BIS, BAS, anksioznost i depresija

Brojna istraživanja pokazuju da je disbalans između BIS-a i BAS-a rizični faktor za psihopatologiju, osobito za anksiozne i depresivne poremećaje (18-21). Visoka osjetljivost BIS-a konzistentno je povezana s višim razinama anksioznosti (22-25), ali i s depresivnošću, vjerojatno zbog povećane samorefleksije, brige i anticipiranja negativnih ishoda (26). S druge strane, literatura o BAS-u u predviđanju internalizirane psihopatologije je manje dosljedna, no niska aktivacija BAS-a povezuje se s anhedonijom, gubitkom interesa i smanjenom osjetljivošću na nagradu – ključnim obilježjima depresije (27-29). Longitudinalna istraživanja (26,30,31) pokazala su da osobe s nižim BAS-om imaju veću vjerojatnost trajanja depresivnih simptoma tijekom vremena.

Osobe s niskim BAS-om imaju slab odgovor na nagrade i gube motivaciju. Često osjećaju bezvoljnost, tugu i gubitak interesa. S druge strane, viši BAS kod depresivnih pacijenata predviđa oporavak od poremećaja, dok nije bilo veze između BIS-a i oporavka. Istovremeno, longitudinalna studija Johnson i sur. (22)

status (BAS_w), to initiative and novelty-seeking tendencies (BAS_s), persistence in goal attainment (BAS_g), and emotional satisfaction following achievement (BAS_l). These dimensions have different associations with the BIS, therefore BAS_w has a negative correlation and BAS_l has a positive correlation with the BIS, while BAS_s and BAS_g have no correlation with it. Conversely, a higher-order factor, Avoidance Tendency, comprises BIS and FFFS, and is associated with neuroticism, negative affect, and sensitivity to punishment (17).

Given that these systems are activated by appetitive, aversive or conflicting stimuli and tendencies, some studies have focused on their association with psychopathology, specifically with anxiety and depressive disorders.

BIS, BAS, Anxiety and Depression

Numerous studies indicate that an imbalance between the BIS and BAS constitutes a risk factor for psychopathology, particularly for anxiety and depressive disorders (18-21). High BIS sensitivity is consistently associated with elevated levels of anxiety (22-25), as well as depressive symptoms, likely due to increased self-reflection, worry, and anticipation of negative outcomes (26). In contrast, findings regarding the BAS in terms of predicting internalized psychopathology are less consistent. However, low BAS activation is associated with anhedonia, loss of interest, and reduced sensitivity to reward – which are core features of depression (27-29). Longitudinal studies (26, 30, 31) have shown that individuals with lower BAS are more likely to experience persistent depressive symptoms over time.

Individuals with low BAS exhibit diminished responses to reward and lose motivation. They often experience apathy, sadness, and loss of interest. Conversely, higher BAS in depressed patients predicts recovery from the disorder, whereas no association between the BIS and

nije pronašla vezu između BAS-a i dijagnoza depresije gdje su sudionici ispunjavali kriterije za depresivni, anksiozni ili oba poremećaja na temelju dijagnostičkih kriterija DSM-IV. Meta-analizom 204 studije koje se bave TOP-om, depresijom i anksioznošću zaključeno je kako je osjetljivost na kaznu (BIS) visoka i u depresiji i u anksioznosti dok BAS negativno predviđa samo depresiju, a ne anksioznost (32). Kada se radi o povezanosti BIS-a i BAS-a sa specifičnim vrstama anksioznih poremećaja istraživanja su oskudna. Kimbrel, Mitchell i Nelson-Gray su utvrdili da pojedinci sa socijalnom anksioznošću prijavljuju i više razine BIS-a i niže razine BAS-a u usporedbi s pojedincima s malo ili specifičnim socijalnim strahovima (33,34). Ovi nalazi ukazuju da socijalna anksioznost uključuje i višu osjetljivost BIS-a i nižu BAS-a. U jednom se istraživanju pokazalo kako vezu BAS-a i depresivnosti moderira BIS: BAS se pokazao značajnim za predviđanje depresivnih simptoma samo kod pojedinaca s visokom bihevioralnom inhibicijom (35). Ovi nalazi podržavaju ideju da su mehanizmi nagrađivanja i kažnjavanja različito uključeni u različite oblike internaliziranih poremećaja.

Ukratko, istraživanja navode kako je visoki BIS povezan s anksioznim i depresivnim simptomima, dok su za BAS u znanstvenim istraživanjima nalazi nekonzistentni. Mali je broj istraživanja koja su povezivala različite komponente BAS-a s ovim poremećajima, kao i različitim vrstama anksioznosti, osim za socijalnu anksioznost koja je je povezana s višim vrijednostima BIS-a i nižim BAS-a. Važno je napomenuti da ova istraživanja ne razlikuju BAS po njegovim specifičnim komponentama nego ga uzimaju kao jednu varijablu, što bi moglo objasniti ove nekonzistentne nalaze u istraživanjima. Stoga je cilj ovog istraživanja detaljnije ispitati povezanost dimenzija ličnosti s pokazateljima mentalnog zdravlja, uključujući depresivnost i različite oblike anksioznosti (socijalna evaluacija, fizička opasnost,

recovery has been observed. At the same time, a longitudinal study conducted by Johnson et al. (22) found no link between the BAS and depression diagnoses when participants met the criteria for depressive, anxiety, or both disorders based on the DSM-IV diagnostic criteria. A meta-analysis of 204 studies examining the RST, depression, and anxiety showed that sensitivity to punishment (BIS) is elevated both in depression and anxiety, whereas BAS negatively predicts only depression, and not anxiety (32). Research on the association of the BIS and BAS with specific types of anxiety disorders remains scarce. Kimbrel, Mitchell, and Nelson-Gray (2010) found that individuals with social anxiety report higher BIS and lower BAS levels compared to those with minimal or specific social fears (33, 34). These findings suggest that social anxiety involves both heightened BIS sensitivity and reduced BAS sensitivity. One study indicated that the relationship between the BAS and depressive symptoms is moderated by the BIS: BAS was predictive of depressive symptoms only in individuals with high behavioral inhibition (35). These results support the idea that reward and punishment mechanisms are differently involved in distinct forms of internalized disorders.

In summary, studies indicate that high BIS is associated with anxiety and depressive symptoms, whereas BAS-related scientific findings are inconsistent. Few studies have examined the connection between specific BAS components and these disorders or different forms of anxiety, with the exception of social anxiety, which is linked to higher BIS and lower BAS values. It should be noted that these studies treat BAS as a single variable rather than distinguishing its specific components, which may account for these inconsistent findings. Therefore, the aim of the present study was to examine in greater detail the associations between different dimensions of personality and indicators of mental health, including depressive symptoms and various forms of anxiety (social

svakodnevna zabrinutost te anksioznost u novim i nejasnim situacijama).

POSTUPAK

Provedeno je online istraživanje na punoljetnim osobama tijekom mjeseca travnja 2023. godine. Link na online upitnike dijeljen je putem društvenih mreža (*Facebook*) te *WhatsApp* aplikacije. Sudionici su pročitali informirani pristanak iz kojeg su saznali kako se istraživanje provodi u sklopu poslijediplomskog doktorskog studija psihologije Filozofskog fakulteta Sveučilišta u Zagrebu te kako je u potpunosti anonimno, osmišljeno i provodi se u skladu s etičkim načelima struke. Obaviješteni su kako mogu odustati u bilo kojem trenutku te im je kao nagrada pri izlaženju sa stranice prikazan tekst o tehnici opuštanja koju mogu koristiti u svakodnevnom životu. Također, objašnjeno je kome i gdje se mogu obratiti ako osjete da im je potrebna psihološka pomoć, te gdje i kada će moći pročitati rezultate istraživanja.

Ako su označili „Pristajem“ upućeni su na upitnike. U uvodnom dijelu ispunili su upitnik socioekonomskih karakteristika. Nakon toga su ispunjavali upitnike koji se odnose na tendenciju izbjegavajućem i približavajućem ponašanju, različite crte anksioznosti te depresivnost.

MJERNI INSTRUMENTI

Upitnik o socioekonomskim karakteristikama

U ovom dijelu sudionici su pitani za dob, rod, završeno školovanje, bračni status, radni status, veličinu mjesečnih prihoda, veličinu mjesta boravka te boluju li od neke kronične tjelesne bolesti ili psihijatrijskog poremećaja (u obliku da/ne). Na pitanje roda, mjesečnih prihoda te dijagnosticirane bolesti mogli su zaokružiti i

evaluation, physical threat, everyday worry, and anxiety in new and ambiguous situations).

METHOD

The survey was conducted online during April 2023 and involved adult participants. A link to the online questionnaires was shared via social media (*Facebook*) and the *WhatsApp* application. The participants read the informed consent form informing them that the study was being conducted as part of the Postgraduate Doctoral Study of Psychology at the Faculty of Humanities and Social Sciences of the University of Zagreb, and that it was completely anonymous, designed, and conducted in accordance with the ethical principles of the profession. They were informed that they could withdraw from participation at any time. As a reward upon leaving the page, they were presented a text about a relaxation technique applicable in everyday life. Additionally, they were informed about who and where they could turn to if they felt they needed psychological support, as well as where and when they would be able to read the study results.

If they selected 'I agree,' they were directed to the questionnaires. In the introductory part, they completed a questionnaire on socioeconomic characteristics. Next, they completed questionnaires assessing their tendencies toward avoidance and approach behaviors, various anxiety traits, and depressive symptoms.

MEASUREMENT INSTRUMENTS

Questionnaire on Socioeconomic Characteristics

In this part, the participants were asked about their age, gender, completed education, marital status, employment status, size of monthly income, size of place of residence, and whether they suffer from any chronic physical illness

„Ne želim odgovoriti“, a za rod i „Nešto drugo, upišite“.

Upitnik tendencija izbjegavanja i približavanja

Upitnik tendencija izbjegavanja i približavanja preuzet je iz istraživanja Krupić i sur. (36). Upitnik se sastoji od 27 čestica u kojima sudionici procjenjuju koliko se svaka tvrdnja odnosi na njih na ljestvici od 1 do 6 (1 – *uopće se ne odnosi na mene*, 6 – *u potpunosti se odnosi na mene*). Upitnik mjeri šest faktora: anksioznost (BIS), strah (BBBS), želje (BAS_w), traženje (BAS_s), upornost (BAS_g) i ugoda (BAS_l). Pouzdanost pojedinih podljestvica na uzorku u istraživanju Krupić i sur. je iznosila $\alpha = 0,856 / \omega = 0,860$ za BIS; $\alpha = 0,871 / \omega = 0,872$ za BBBS; $\alpha = 0,851 / \omega = 0,878$ za BAS_w ; $\alpha = 0,835 / \omega = 0,829$ za BAS_s ; $\alpha = 0,927 / \omega = 0,928$ za BAS_g ; te $\alpha = 0,844 / \omega = 0,841$ za BAS_l . Ukupni se rezultati izražavaju kao prosjeci na svakoj od šest dimenzija. U ovom istraživanju su Cronbachovi alpha koeficijenti pouzdanosti (α) iznosili ,86 za BIS, ,84 za BBBS, ,88 za BAS_w , ,79 za BAS_s , ,87 za BAS_g te ,79 za BAS_l .

Ljestvica depresivnosti, anksioznosti i stresa (*Depression, Anxiety and Stress Scale, DASS-21*)

DASS - 21 je kraća verzija originalnog DASS-42 upitnika (37) koja se sastoji od 21 tvrdnje, a kojom se ispituje razina depresivnosti (DEP), anksioznosti (ANK) i stresa (STR). Sve tri podljestvice opisuju po sedam tvrdnji, a viši rezultat na svakoj podljestvici označava više razne anksioznosti, depresivnosti i stresa.

Zadatak ispitanika je da na ljestvici od 0 (uopće se nije odnosilo na mene) do 3 (gotovo u potpunosti ili većinu vremena se odnosilo na mene) označe koliko često su u proteklih tjedan dana zadnje vrijeme doživjeli stanje opisano u tvrdnji. Ovaj upitnik se često koristi za procje-

or psychiatric disorder (in the form of yes/no answers). For the questions about gender, monthly income and diagnosed illnesses, they could also select 'I prefer not to answer,' and for gender, 'Other, please specify.'

The Approach and Avoidance Tendencies Questionnaire

This questionnaire was adapted from a study conducted by Krupić et al. (36). It consists of 27 items in which the participants rate the extent to which each statement applies to them on a scale from 1 to 6 (1 – *does not apply to me at all*, 6 – *fully applies to me*). The questionnaire measures six factors: anxiety (BIS), fear (FFFS), wanting (BAS_w), seeking (BAS_s), persistence (BAS_g), and liking (BAS_l). The reliability of the subscales in the study sample by Krupić et al. was as follows: $\alpha = 0.856 / \omega = 0.860$ for BIS; $\alpha = 0.871 / \omega = 0.872$ for FFFS; $\alpha = 0.851 / \omega = 0.878$ for BAS_w ; $\alpha = 0.835 / \omega = 0.829$ for BAS_s ; $\alpha = 0.927 / \omega = 0.928$ for BAS_g ; and $\alpha = 0.844 / \omega = 0.841$ for BAS_l . The overall scores were calculated as the means for each of the six dimensions. In this study, the Cronbach's alpha reliability coefficients (α) amounted to .86 for BIS, .84 for FFFS, .88 for BAS_w , .79 for BAS_s , .87 BAS_g and .79 for BAS_l .

Depression, Anxiety and Stress Scale (DASS-21)

The DASS-21 is a shorter version of the original DASS-42 (37), consisting of 21 items that assess the levels of depression (DEP), anxiety (ANX), and stress (STR). Each of the three subscales contains seven items, and higher scores on each subscale indicate greater levels of anxiety, depression, and stress.

The participants' task was to rate how often they experienced each described state over the past week on a scale from 0 (did not apply to me at all) to 3 (applied to me almost fully or most of the time). This questionnaire is widely

nu depresivnosti te pokazuje dobre metrijske karakteristike. U ovom su istraživanju korištene samo podljestvice anksioznosti i depresivnosti te su Cronbachovi alpha koeficijenti pouzdanosti iznosili ,86 za obje podljestvice.

Endlerove multidimenzionalne ljestvice anksioznosti

Razina anksioznosti mjerena je multidimenzionalnim ljestvicama anksioznosti (*Endler Multidimensional Anxiety Scales*) koje se sastoje od tri dijela: stanja anksioznosti (EMAS-S), crte anksioznosti (EMAS-T) i percepcije anksioznosti (EMAS-P) (20). Za potrebe ovog rada korištene su ljestvice EMAS-T koja mjeri razinu anksioznosti kao crte ličnosti i koja se sastoji od četiri dimenzije: socijalne evaluacije (E-SOC), fizički opasni situacija (E-FIZ), novih i nejasnih situacija (E-NOV) i svakodnevnih situacija (E-DAN). Svaka dimenzija ima po 15 čestica koje ispitanici procjenjuju na 5-stupanjskoj ljestvici Likertova tipa (od 1 – nimalo do 5 – vrlo jako). Unutarnja konzistentnost pojedinih podljestvica u jednom istraživanju iznosila je $\alpha = ,90$ za dimenziju socijalna procjena, $\alpha = ,90$ za dimenziju fizička opasnost, $\alpha = ,87$ za dimenziju nove situacije, $\alpha = ,87$ za dimenziju svakodnevne situacije (38). U ovom istraživanju su koeficijenti pouzdanosti (Cronbachov alpha) iznosili ,67 za E-SOC, ,76 za E-FIZ te ,70 za E-NOV i E-DAN.

Statističke metode

Za opis uzorka koristile su se metode deskriptivne i inferencijalne statistike. Numerički podatci opisani su frekvencijama (postotcima), a dob sudionika aritmetičkom sredinom i standardnom devijacijom.

Regresijskim analizama provjerili smo koliko osjetljivost na potkrepljenje može objasniti određene vrste anksioznosti i depresivnost našim sudionicima.

used for assessing depressive symptoms, and has good psychometric properties. Only the anxiety and depression subscales were used in this study, and Cronbach's alpha reliability coefficients amounted to .86 for both subscales.

The Endler Multidimensional Anxiety Scales (EMAS)

Anxiety levels were measured using the Endler Multidimensional Anxiety Scales, which consist of three components: state anxiety (EMAS-S), trait anxiety (EMAS-T), and anxiety perception (EMAS-P) (20). For the purpose of this study, the EMAS-T scales were used to measure anxiety as a personality trait, consisting of four dimensions: social evaluation (E-SE), physical danger (E-PD), new and ambiguous situations (E-AM), and daily routines (E-DR). Each dimension consists of 15 items rated by the participants on a 5-point Likert scale (from 1 – not at all, to 5 – very strongly). Internal consistency of individual subscales in a prior study amounted to $\alpha = .90$ for social evaluation, $\alpha = .90$ for physical danger, $\alpha = .87$ for new situations, and $\alpha = .87$ for daily routines (38). In this study, Cronbach's alpha reliability coefficients amounted to .67 for E-SE, .76 for E-PD, and .70 for both E-AM and E-DR.

Statistical Methods

Descriptive and inferential statistics were used to characterize the sample. Numerical data were described using frequencies (percentages), while participants' age was reported as mean and standard deviation.

Regression analyses were conducted to examine the extent to which reinforcement sensitivity could account for different forms of anxiety and depressive symptoms among our participants.

Statistical data analyses were performed using SPSS for Windows (version 25, SPSS Inc., Chicago, IL, USA). The significance level (p) was set at $\alpha = .05$.

Za statističku obradu podataka korišten je program SPSS for Windows (inačica 25, SPSS Inc., Chicago, IL, SAD). Razina značajnosti (p) određena je na $\alpha = ,05$.

Prije provedbe regresijske analize provjerene su pretpostavke linearnosti, normalnosti reziduala, homoskedastičnosti, neovisnosti pogrešaka, odsutnosti multikolinearnosti i outliera. Sve pretpostavke bile su zadovoljene.

SUDIONICI

U istraživanju je sudjelovalo 446 osoba, 272 žene i 173 muškarca (jedna se osoba izjasnila kao birodna). Cijelo istraživanje su završile 362 osobe, tj. 201 žena i 160 muškaraca. Uobičajeno se u online istraživanjima očekuje odustajanje sudionika u razini 10-20 %, a i dalje visok broj sudionika omogućuje dobru pouzdanost rezultata. Trećina sudionika je bila mlađa od 25 godina, 18 % ih je bilo u tridesetima, 20 % u četrdesetima te 10 % starijih od 50 godina. Prosječna dob sudionika je 34 godine ($M = 34,11$, $SD = 12,29$). Samaca je bilo 25 %, u braku je 40 % sudionika, a u neformalnoj vezi još 30 % (od kojih 40 % i živi zajedno), dok su ostali razvedeni ili udovci (5 %). Sudionici su bili pretežno visokog obrazovanja (56 %), 32 % ima srednjoškolsko obrazovanje, a 12 % završen stupanj doktora znanosti. Najveći udio osoba je u radnom odnosu (66 %) ili studira (28 %), dok je manji udio nezaposlenih i umirovljenika (6 %). Veliki postotak osoba nema dijagnosticiranu kroničnu tjelesnu (80 %) niti psihijatrijsku bolest (92 %).

REZULTATI I RASPRAVA

Rezultati pet pojedinačnih regresijskih analiza prikazani su u tablici 1. U regresijskim analizama prediktori su isti, tj. oni se sastoje od šest komponenata izbjegavanja i približavanja

Before conducting the regression analysis, the assumptions of linearity, residual normality, homoscedasticity, independence of errors, absence of multicollinearity, and outliers were verified. All assumptions were met.

PARTICIPANTS

A total of 446 individuals participated in the study, of whom 272 were women and 173 were men (one participant identified as non-binary). The entire study was completed by 362 participants, i.e. 201 women and 160 men. The expected participant dropout rates in online studies usually amount to 10-20 %, while a high number of remaining participants ensures good reliability of the results. One-third of the participants were under 25 years of age, 18% were in their thirties, 20% were in their forties, and 10% were over 50 years old. The mean age of the participants was 34 years ($M = 34.11$, $SD = 12.29$). In terms of marital status, 25% of the participants were single, 40% were married, and 30% were in informal relationships (of which 40% cohabitated), while the remaining 5% were divorced or widowed. Most participants had higher education (56%), 32% had completed secondary education, and 12% held a doctoral degree. The majority were employed (66%) or attending university (28%), with a smaller proportion being unemployed or retired (6%). A high percentage of participants reported having no diagnosed chronic physical illnesses (80%) or psychiatric disorders (92%).

RESULTS AND DISCUSSION

The results of five separate regression analyses are presented in Table 1. The predictors in the regression analyses are the same, i.e. they consist of six components of avoidance and approach (BIS, FFFS, BAS_w – wanting, BAS_s – seeking, BAS_g – getting, BAS_l – liking). There

TABLICA 1. Prikaz rezultata (beta) pojedinačnih regresijskih analiza gdje su prediktori u svim analizama šest komponenata izbjegavanja i približavanja, a kriteriji u pojedinačnima su redom četiri dimenzije anksioznosti kao crte ličnosti (E-SOC: socijalna, E-FIZ: od fizičke ugroze, E-NOV: od novih situacija te E-DAN: svakodnevna) i depresivnost (DEPR).

TABLE 1. Overview of the (beta coefficients) results of individual regression analyses where the predictors in all analyses are the six components of avoidance and approach, and the criteria in the individual analyses are, respectively, the four dimensions of trait anxiety (E-SE: social, E-PD: from physical danger, E-AM: from new situations, and E-DR: daily routines) and depression (DEP).

Prediktori / Predictors	Kriterij / Criterion				
	E-SOC / E-SE R ² = ,488***	E-FIZ / E-PD R ² = ,204***	E-NOV / E-AM R ² = ,400***	E-DAN / E-DR R ² = ,103***	DEPR / DEP R ² = ,344***
BIS	,675***	,398***	,465***	,020	,157***
BBBS / FFFS	-,004	,034	,105**	,168**	,236***
BAS _w	-,003	,084	,002	-,024	,128***
BAS _s	-,067	-,098	-,186***	-,015	,095***
BAS _g	-,016	,084	-,016	-,025	-,254***
BAS _i	-,088**	,066	-,156***	-,233***	-,279***

*** p<,001, **p<,05

(BIS, BBBS, BAS_w – želje, BAS_s – traženje, BAS_g – upornost, BAS_i – ugoda). Kriterij je jedan u svakoj od pet analiza: to su redom četiri dimenzije anksioznosti kao crte ličnosti (E-SOC: socijalna, E-FIZ: od fizičke ugroze, E-NOV: od novih situacija te E-DAN: svakodnevna) te depresivnost.

Rezultati provedenih regresijskih analiza pokazuju da komponente Teorije osjetljivosti na potkrepljenja (TOP) značajno predviđaju varijacije u socijalnoj anksioznosti, anksioznosti u novim situacijama, svakodnevnoj anksioznosti i depresivnosti. Dobiveni nalazi uglavnom su u skladu s prethodnim znanstvenim radovima pri čemu se uočavaju i određene specifičnosti.

Socijalna anksioznost

Komponente TOP objašnjavaju najviše, gotovo polovicu varijance socijalne anksioznosti (48,8 %) što je relativno visoka vrijednost u psihološkim istraživanjima i ukazuje na dobar model.

BIS je najvažniji i jedini snažno pozitivan prediktor socijalne anksioznosti što znači da su osobe koje su sklonije izbjegavanju negativnih ishoda, tj. imaju veću osjetljivost na kaznu, opreznije i zabrinutije te su također socijalno

is one criterion in each of the five analyses: these are, respectively, the four dimensions of trait anxiety (E-SE: social, E-PD: from physical danger, E-AM: from new situations, and E-DR: daily routines) and depression.

The results of the conducted regression analyses indicate that the components of the Reinforcement Sensitivity Theory (RST) significantly predict variations in social anxiety, anxiety in new situations, daily anxiety, and depressive symptoms. Overall, the obtained findings are largely consistent with previous studies, whereby some specific nuances were also observed.

Social Anxiety

The RST components explained the largest portion, almost half of the variance in social anxiety (48.8%), which is a relatively high value in psychological research, and indicates a well-fitting model.

The BIS emerged as the most important and only strong positive predictor of social anxiety, which suggests that individuals who are prone to avoid negative outcomes, i.e. are more sensitive to punishment, are more cautious, worry-prone and socially anxious. This finding is consistent with the theory, as BIS is traditionally associated with anxiety and inhibition in social situations.

anksioznije. Ovaj je nalaz u skladu s teorijom, jer se BIS tradicionalno povezuje s anksioznošću i inhibicijom u socijalnim situacijama.

BAS₁ (komponenta koja označava doživljavanje ugođe nakon ostvarenja cilja) ima značajan negativan doprinos. Osobe koje manje uživaju u socijalizaciji (nizak BAS₁) imaju višu socijalnu anksioznost što bi moglo dodatno poticati izbjegavanje socijalnih situacija. Ovaj je nalaz djelomično u skladu i s nalazima Kimbrel i suradnika iz 2012. godine, koji su pokazali da visok BIS i nizak BAS djeluju preko kognitivnih pristranosti u predviđanju socijalne anksioznosti (13). Sličan je nalaz dobio i 2016. godine Kimbrel sa suradnicima kod ratnih veterana kod kojih je socijalna anksioznost pozitivno povezana s BIS-om i BBBS-om te negativno s BAS osjetljivošću (39).

Ostale komponente BAS-a (želje, traženje, upornost) te BBBS-a (strah) nisu statistički značajni prediktori i ne doprinose značajno predviđanju socijalne anksioznosti kada se uzme u obzir utjecaj BIS-a i BAS₁-a. Iako BBBS mjeri *primarni strah* (reakcije borbe ili bijega), očito ne igra ključnu ulogu u kontekstu socijalne anksioznosti, koja je kod naših sudionika više povezana s inhibicijom nego s automatskim odgovorima straha.

Ovi rezultati pokazuju važnost neuropsiholoških mehanizama motivacije u razumijevanju socijalne anksioznosti i mogu imati praktične implikacije za psihološke intervencije, npr., u terapijski rad uključiti različite načine povećavanja ugođe u socijalnim interakcijama koja bi mogla smanjiti razinu socijalne anksioznosti.

Anksioznost u novim situacijama

Naš model objašnjava 40,0 % varijance anksioznosti u novim situacijama sa snažnim pozitivnim BIS prediktorom, slabijim BBBS prediktorom, te negativnim prediktorima traženja novih situacija, kao i doživljavanju ugođe u novim

The BAS₁ (the component reflecting the experience of pleasure after achieving a goal) showed a significant negative contribution. Individuals who derive less pleasure from social interactions (low BAS₁) exhibited higher social anxiety, potentially reinforcing avoidance of social situations. This finding partially aligns with the findings obtained by Kimbrel et al. in 2012, which showed that high BIS and low BAS act through cognitive biases in predicting social anxiety (13). Similar results were also reported by Kimbrel et al. in 2016 among war veterans, where social anxiety was positively associated with the BIS and FFFS, and negatively associated with BAS sensitivity (39).

Other BAS components (wanting, seeking, getting) and FFFS (fear) were not statistically significant predictors and did not substantially contribute to social anxiety when considering the influence of BIS and BAS₁. Although the FFFS measures *the primary fear* (fight-or-flight reactions), it apparently does not play a key role in the context of social anxiety, which seems more related to behavioral inhibition than to automatic fear responses in our sample.

These findings underscore the importance of neuropsychological motivational mechanisms in understanding social anxiety, and may have practical implications for psychological interventions, e.g. by including into therapeutic work various strategies aimed at increasing pleasure in social interactions, which could reduce social anxiety.

Anxiety in New Situations

Our model explained 40.0% of the variance in anxiety in new situations, with the BIS acting as a strong positive predictor, FFFS as a weaker predictor, and novelty-seeking and experiencing pleasure in new situations as negative predictors. Individuals who are sensitive to punishment and perceive novelty as threatening, experience heightened anxiety. This finding aligns with the RST, where the BIS supports

situacijama. Osobe koje su osjetljive na kaznu i percipiraju novost kao prijetnju doživljavaju pojačanu anksioznost. Ovaj nalaz je u skladu s TOP teorijom gdje BIS podupire zabrinutost i neodlučnost u nepoznatim ili dvosmislenim kontekstima, kao i da osobe koje su reaktivnije na izravne prijetnje pokazuju veću anksioznost u novim situacijama. Suprotno, osobe koje traže novost i uživaju u nagradama, pokazuju nižu anksioznost, što ukazuje da pozitivna motivacija štiti od anksioznosti u novim situacijama. Ovi su rezultati u skladu s TOP modelom i prethodnim ranije spomenutim istraživanjima (8,13).

Anksioznost od fizički opasnih situacija

Model objašnjava 20,4 % varijance anksioznosti od fizički opasnih situacija pri čemu je jedini značajan pozitivan prediktor BIS. Ovaj rezultat ukazuje na to da osobe s povećanom osjetljivošću na kaznu i izbjegavanjem negativnih ishoda pokazuju više anksioznosti od tjelesne povrede. Kako tjelesna povreda uglavnom označava bolno iskustvo, osobe koje su osjetljivije na kaznu izbjegavat će mogućnost bolnog doživljaja. Istraživanja uglavnom podupiru ovaj nalaz. Rezultati istraživanja Sánchez-Rodríguez i suradnika 2021. godine podržavaju ideju da je aktivacija BIS-a važnija od aktivacije BAS-a u objašnjavanju različitih ishoda povezanih s boli (40), kao i da je uloga BIS-a kod kronične boli dominantna u općem funkcioniranju veterana (41).

Svakodnevna anksioznost

Model objašnjava 10,3 % varijance u svakodnevnoj anksioznosti što je statistički značajno, ali se radi o relativno slabom modelu u usporedbi s prethodnima. Značajan pozitivan prediktor svakodnevne anksioznosti je BBBS što ukazuje na to da su osobe koje su osjetljivije na prijetnje i opasnosti (borba – bijeg - blokada

worry and indecision in unfamiliar or ambiguous contexts, and the individuals who are more reactive to direct threats exhibit higher anxiety in new situations. Conversely, individuals who seek novelty and enjoy rewards display lower anxiety, suggesting that positive motivation protects against anxiety in new contexts. These results are consistent with the RST model and the aforementioned studies (8, 13).

Anxiety in Physically Dangerous Situations

The model explained 20.4% of the variance in anxiety in physically dangerous situations, with the BIS emerging as the only significant positive predictor. This result indicates that individuals with heightened sensitivity to punishment and tendency to avoid negative outcomes experience higher levels of anxiety due to potential physical injury. Since physical injury usually represents a painful experience, those with higher sensitivity to punishment tend to avoid situations that could potentially be painful. Previous studies generally support this finding. The results of a study conducted by Sánchez-Rodríguez et al. in 2021, supported the idea that BIS activation is more important than BAS activation in explaining the various outcomes related to pain (40), as well as that the role of BIS in chronic pain is dominant in the overall functioning of veterans (41).

Daily Anxiety

The model explained 10.3% of the variance in daily anxiety, which is statistically significant, but represents a relatively weak model compared to the previous ones. The FFFS emerged as a significant positive predictor of daily anxiety, indicating that individuals who are more sensitive to threats and danger (fight–flight–freeze responses) tend to experience higher daily anxiety. Emotional satisfaction after engagement in activities (BAS) was shown to be a significant negative predictor of daily anxiety, meaning that individ-

reakcije) sklonije doživljavanju više svakodnevne anksioznosti. Značajan negativni prediktor svakodnevne anksioznosti je doživljavanje ugone nakon aktivnosti (BAS), što znači da će osobe koje inače doživljavaju više zadovoljstva nakon aktivnosti biti manje svakodnevno anksiozne.

Za razliku od socijalne anksioznosti, gdje dominira BIS (zabrinutost, anticipacija), ovdje reaktivni strah ima veću ulogu moguće i kroz urođeni neurobiološki sustav. Također, svakodnevnicu je nemoguće izbjeći za razliku od socijalnih, novih ili fizički opasnih situacija, pa vjerojatno BIS stoga nema ključnu ulogu. Model objašnjava manji udio varijance (10,3 %) što znači da su za svakodnevnu anksioznost vjerojatno važni i drugi čimbenici (npr. životne okolnosti, stresori, emocionalna regulacija).

Depresija

Model objašnjava 34,4 % varijance u depresivnosti što je statistički značajno i teorijski relevantno. To pokazuje da emocionalno motivacijski sustavi objašnjavaju više od trećine razlika u depresivnosti. Sve komponente TOP-a su povezane s depresijom: BIS je pozitivno i značajno povezan s depresivnošću, tj. osobe s povećanom osjetljivošću na kaznu i izbjegavanjem negativnih ishoda pokazuju više depresivnih simptoma. Ovaj nalaz je očekivan i u skladu je s TOP teorijom, jer je BIS povezan s neugodnim emocijama i pasivnošću. BBBS je također pozitivno i značajno povezan s depresivnošću što znači da osobe koje imaju jači reaktivni emocionalni odgovor na percipirane prijetnje su i depresivnije.

Ovi nalazi su u skladu s meta-analitičkim nalazima, gdje je depresivnost bila pozitivno povezana s BIS i BBBS komponentama, što odražava povećanu osjetljivost na prijetnje i negativne ishode (32). Istovremeno komponente BAS sustava „upornost” i „ugoda” pokazale su se kao snažni negativni prediktori depresije što je u

uals who generally derive more satisfaction from activities will experience lower daily anxiety.

Unlike social anxiety, which is dominated by the BIS (worry and anticipation), in daily anxiety reactive fear plays a larger role, possibly through an innate neurobiological system. Furthermore, unlike social, new or physically dangerous situations, everyday life cannot be avoided, which is probably why the BIS does not play a central role in this aspect. The model explains a smaller proportion of variance (10.3 %), which also suggests that other factors (e.g. life circumstances, stressors, or emotion regulation) likely contribute to daily anxiety.

Depression

The model explained 34.4% of the variance in depressive symptoms, which is both statistically significant and theoretically relevant. This indicates that emotional-motivational systems account for more than one-third of the differences in depressive symptoms. All RST components were related to depression: the BIS was positively and significantly associated with depressive symptoms, meaning that individuals with heightened sensitivity to punishment and tendencies to avoid negative outcomes exhibit more depressive symptoms. This finding was expected and consistent with the RST theory, since the BIS is associated with unpleasant emotions and passivity. The FFFS was also positively and significantly related to depression, suggesting that individuals with stronger reactive emotional responses to perceived threats are more prone to depressive symptoms.

These findings align with meta-analytic evidence showing that depression is positively associated with BIS and FFFS components, reflecting increased sensitivity to threats and negative outcomes (32). Conversely, the BAS components “persistence” and “pleasure” emerged as strong negative predictors of depression, which is consistent with the characterization of

skladu s obilježjem depresije kao poremećaja smanjene reaktivnosti na nagradu i anhedonije (42, 43).

Zanimljiv je nalaz da su komponente BAS „željje” i „traženje” pozitivno povezane s depresivnošću što se može interpretirati kao frustrirana motivacija – osobe koje snažno žele ili traže nagrade, ali ih ne uspijevaju ostvariti, mogu doživljavati povećano razočaranje i osjećaj neuspjeha, što posljedično jača simptome depresije. Ovaj nalaz nije uobičajen u literaturi, no kompatibilan je s teorijama koje ukazuju na nesklad između želja i mogućnosti kao mehanizma depresije (44).

Uzmu li se svi ovi nalazi u obzir, rezultati provedenih analiza pokazuju da komponente teorije osjetljivosti na potkrepljenja značajno doprinose objašnjenju različitih oblika anksioznosti i depresivnosti. Najveći doprinos u svim modelima pokazuje sustav inhibicije ponašanja (BIS), koji je dosljedno povezan s višim razinama anksioznosti i depresije, potvrđujući njegovu ključnu ulogu u obradi prijetnje i izbjegavanju negativnih ishoda. Sustav ponašajne aktivacije (BAS), osobito komponenta doživljavanja ugone nakon ostvarenja cilja (BAS_l), pokazuje zaštitni učinak – više razine ugone povezane su s nižom socijalnom i svakodnevnom anksioznošću te manjom depresivnošću. Suprotno tome komponente BAS_w i BAS_s, koje označavaju potragu za nagradom, u nekim su slučajevima pozitivno povezane s depresivnošću, što može ukazivati na frustriranu motivaciju. Reaktivni sustav straha (BBBS) pokazuje selektivne učinke pri čemu je važniji za svakodnevnu anksioznost i depresivnost nego za socijalnu anksioznost. Ukupno gledano, TOP komponente objašnjavaju značajan dio varijance socijalne anksioznosti i depresivnosti, dok su manje učinkovite u predviđanju svakodnevne anksioznosti. Dobiveni nalazi potvrđuju da su individualne razlike u osjetljivosti na nagrade i kazne temeljni mehanizmi emocionalnog funkcioniranja. Ovi

depression as a disorder that involves reduced reward responsiveness and anhedonia (42, 43).

Interestingly, the BAS components “wanting” and “seeking” were positively associated with depressive symptoms. This may be interpreted as frustrated motivation – individuals who strongly desire or seek rewards, but fail to achieve them, may experience greater disappointment and sense of failure, which in turn exacerbates depressive symptoms. While this finding is less common in the literature, it aligns with theories suggesting that a mismatch between desires and attainable outcomes can contribute to depression (44).

Taking into account all of the obtained findings, the results of conducted analyses demonstrate that RST components significantly contribute to explaining various forms of anxiety and depression. The behavioral inhibition system (BIS) was shown to have the largest contribution across all models, being consistently associated with higher levels of anxiety and depression, thus confirming its central role in threat processing and avoidance of negative outcomes. The behavioral approach system (BAS), particularly the component reflecting pleasure after goal attainment (BAS_l), exhibited a protective effect – higher levels of pleasure were associated with lower social and daily anxiety, and reduced depression. In contrast, the BAS_w and BAS_s components, which represent the pursuit of rewards, were in some cases positively related to depressive symptoms, potentially reflecting frustrated motivation. The reactive fear system (FFFS) exhibited selective effects, being more relevant for daily anxiety and depression than for social anxiety. Overall, RST components explain a substantial portion of variance in social anxiety and depression, while they are less effective in predicting daily anxiety. The obtained findings confirm the position that individual differences in sensitivity to reward and punishment are fundamental mechanisms of emotional functioning. These results have practical implications as well – enhancing

rezultati imaju i praktične implikacije – povećanje pozitivne motivacije i užitka u socijalnim interakcijama moglo bi smanjiti anksioznost i depresivnost. Ukupno, nalazi potvrđuju teorijsku valjanost TOP modela i ukazuju na važnost integriranja motivacijskih sustava u razumijevanju i tretmanu emocionalnih poremećaja.

OGRANIČENJA I PRAKTIČNE SMJERNICE

Iako se radi o relativno velikom uzorku naši su sudionici većinom visoko obrazovani i zaposleni, a gotovo trećinu sudionika čine studenti. Radi se i o pretežno zdravoj populaciji. S obzirom na ove specifičnosti pitanje je koliko bi se rezultati mogli generalizirati na opću populaciju, ali i koliko su primjenjivi kod pojedinaca s dijagnozama iz depresivnog i anksioznog spektra. Osim navedenog, upitno je jesu li sudionici bili iskreni u svojim odgovorima, što se ne može provjeriti s obzirom da se radi o online istraživanju.

Praktične implikacije uključile bi moguće ispitivanje osjetljivosti na potkrepljenja u kliničkoj populaciji te sukladno tome određivanje prikladnijih tretmana s obzirom na vrstu tegoba. Na primjer, poticanje upornosti (ne odustajanja) te nalaženje ugođe u postignutom cilju bilo bi od koristi u svim tretmanima anksioznosti i depresivnosti. Osim u tretmanima, ovo istraživanje daje i dobru smjernicu za daljnja znanstvena istraživanja mentalnog zdravlja.

ZAKLJUČAK

Bihevioralni inhibicijski sustav (BIS) pokazao se kao snažan prediktor viših razina specifičnih oblika anksioznosti, osobito socijalne i anksioznosti u novim situacijama, te depresivnosti, što potvrđuje njegovu ključnu ulogu

positive motivation and the experience of pleasure in social interactions could reduce anxiety and depressive symptoms. In total, the findings confirm the theoretical validity of the RST model and indicate the importance of integrating motivational systems in the understanding and treatment of emotional disorders.

LIMITATIONS AND PRACTICAL IMPLICATIONS

Although the study involved a relatively large sample, most of our participants were highly educated and employed, and nearly one-third of them were students. They were predominantly healthy individuals. Given these specificities, it is questionable to what extent the findings could be generalized to the general population, as well as how much could be applicable to individuals with diagnoses across the depressive and anxiety spectrum. In addition to the above, it is questionable whether the participants were honest in their responses, which cannot be verified since it was an online survey.

Practical implications would involve possible assessments of reinforcement sensitivity in clinical populations, and accordingly, the determination of more appropriate treatments taking into account the specific type of difficulty. For example, fostering persistence (not giving up) and finding pleasure in achieved goals would be beneficial in all treatments targeting anxiety and depression. Beyond clinical treatments, this study provides useful guidance for future scientific studies addressing mental health.

CONCLUSION

The behavioral inhibition system (BIS) emerged as a strong predictor of higher levels of specific forms of anxiety, particularly social anxiety and anxiety in new situations, as well as depressive symptoms, thus confirming its central role in

u procesima izbjegavanja prijetnji i negativnih ishoda. Međutim, svakodnevna anksioznost bolje je objašnjena komponentama sustava osjetljivosti na prijetnju (BBBS), koje odražavaju reaktivni strah i doživljaj neposredne ugroženosti. Aktivacijski sustav ponašanja (BAS) pokazuje da slabije doživljavanje ugone nakon postignuća cilja predviđa više razine anksioznosti i depresivnosti, dok osobe koje više uživaju u postignućima te koje se lakše motiviraju na djelovanje i upornije ostvaruju ciljeve pokazuju niže razine tih simptoma. Drugim riječima, veća sposobnost doživljavanja pozitivnih emocija i nagrada djeluje zaštitno na mentalno zdravlje. Ovi nalazi ukazuju na složenu međuigru između sustava inhibicije, aktivacije i straha te njihovih uloga u oblikovanju emocionalnih reakcija i psihološke dobrobiti. U praktičnom smislu rezultati ukazuju da bi psihološke intervencije usmjerene na jačanje pozitivne motivacije, povećanje doživljaja ugone i smanjenje preosjetljivosti na kaznu mogle biti korisne u prevenciji i tretmanu anksioznih i depresivnih stanja. Ovi nalazi osim toga otvaraju prostor za daljnja istraživanja neuropsiholoških mehanizama motivacije i njihovih implikacija za razumijevanje individualnih razlika u emocionalnom funkcioniranju.

the processes of avoiding threats and negative outcomes. Daily anxiety, however, was better explained by the reactive fear system (FFFS) components which reflect reactive fear and immediate threat sensitivity. The behavioral approach system (BAS) revealed that lower perception of pleasure following goal attainment predicts higher anxiety and depression levels, whereas individuals who experience more enjoyment from achievements, who are more easily motivated to act and are more persistent in achieving their goals, tend to report lower levels of these symptoms. In other words, greater capacity for experiencing positive emotions and rewards appears protective for mental health. These findings highlight the complex interplay between the inhibition, approach and fear systems, and their roles in shaping emotional responses and psychological well-being. Practically, the results suggest that psychological interventions aimed at enhancing positive motivation, increasing the experience of pleasure, and reducing hypersensitivity to punishment may be effective in preventing and treating anxiety and depressive conditions. Moreover, these findings provide avenues for further research addressing the neuropsychological mechanisms of motivation and their implications for understanding the individual differences in emotional functioning.

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