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Sensory processing sensitivity as a trait of temperament – evolutionary, socio-cultural, biological context and relation to mental disorders

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Summary

This article presents the trait of sensory processing sensitivity (SPS), its characteristics, assessment tool and association with psychiatric disorders based on an analysis of the literature on SPS since 1997. An overview of research on SPS in several relevant contexts is presented: evolutionary/adaptive, socio-cultural, temperamental/personality, and biological, taking into account the influence of genetic factors and the activity of specific areas of the central nervous system involved in processing emotional and cognitive stimuli.

High sensitivity of sensory processing is an innate trait, biologically determined and modulating developmental processes, occurring in 20–35% of the general population regardless of gender. It is characterized by deeper processing of stimuli, ease of overstimulation, strong emotional reactions and empathic bonds, as well as sensitivity to subtleties in the surrounding world. SPS can be associated with susceptibility to the development of a wide range of psychiatric symptoms and disorders, including depressive and anxiety disorders, social phobia, alexithymia, burnout, internalizing and externalizing disorders and selective mutism in children.

Key words: sensory processing sensitivity, temperament, depression, anxiety

Definition and assessment tool of sensory processing sensitivity

Sensory processing sensitivity (SPS) is a temperamental trait that determines an individual's psychosocial development [1]. It is described as a construct relating to the processing of information, both from the external and internal environment of the body, where significant importance is attributed to the activation of the autonomic part of the nervous system, regulation of the functioning of the limbic system, modification of thinking processes and behavioural responses (exploration versus avoidance).

The concept of SPS overlaps in part with Eysenck's notion of introversion [2], Gray's behavioural inhibition system (BIS) concept [3], the notion of shyness as an innate trait of "low sociability" [4], and neuroticism [5]. SPS should not be confused with sensory sensitivity described by Dunn [6], among others, as it refers to the phenomenon of stimulus processing, rather than the perception of stimuli by specific sensory analysers. The concept of SPS was first described in 1997, and its author is Professor Elaine Aron [1]. A monograph on SPS, *The highly sensitive brain*, edited by Bianca P. Acevedo, was published in 2020.

Individuals with high SPS are referred to as Highly Sensitive Persons (HSPs) and account for about 20–35% of the general population, regardless of gender [7, 8]. The acronym DOES describes key elements of the characteristics of a highly sensitive person, with attention paid to depth of processing, ease of overstimulation, strong emotional reactivity and empathy, and sensing the subtleties in the surrounding world [9]. HSPs may be more adaptable in supportive environments [10, 11], however, under unfavourable conditions, they are more likely to develop depressive and anxiety disorders [12, 13]. High sensory processing sensitivity is characterized by a specific neurobiology, as described by correlations between the intensity of specific dimensions of HSPs and genetic factors [14] and parameters of neural activity, including in functional magnetic resonance imaging (fMRI) studies [15].

The tool for assessing SPS in adults is the 27-item, 7-point *Highly Sensitive Person Scale* (HSP Scale) [1]. It examines three dimensions of SPS: ease of excitation (EOE), aesthetic sensitivity (AES) and low sensory threshold (LST) [16]. The HSP scale measures the trait of sensory processing sensitivity as a continuum, hence there are 3 degrees of sensitivity: low, medium and high [8]. The questionnaire items touch upon the aspects of noticing subtle details in the environment, the complexity of the "inner life", perception of art and intense stimuli, conscientiousness, reactivity, being subject to the mood of others, the need to "calm down", the impact of caffeine, pain, hunger, time pressure. A Polish adaptation of this scale was published in 2022 [17] and currently validation of its Polish translation has been completed at the Department of Adult Psychiatry in Poznan.

This review paper contains a literature review of the PubMed database consistent with the search terms: "sensory processing sensitivity" or "highly sensitive person" until October 8, 2022. According to the algorithm used, a total of 99 original and review papers were obtained, of which 51 articles were included. The inclusion criterion was papers that included the above search terms, while the overarching exclusion criterion was inclusion of only the necessary literature, closely related to the topic of the paper, with consideration of publications in Polish journals; therefore, citations of papers that contained results repeated in other studies were not provided.

Evolutionary context of sensory processing sensitivity

In animal research, the terms “personality”, “temperament” and “behaviour” are often used interchangeably to describe a set of behavioural and physiological traits that, in given individuals, are consistent over time and are revealed in different contexts. Two clearly distinguishable types of disposition have been identified: sensitive (shy, reactive, inhibited, “tense”, non-aggressive, using a “break before acting” strategy) and proactive (impulsive, low-reactive, “relaxed”, aggressive, behaving according to the “act first to seize the opportunity”) [18]. They differ in many ways, including the way of feeding and exploring new surroundings. These two strategies seem to have evolved, as each can succeed in different habitat variations. For example, among fruit flies it is possible to distinguish 2 groups representing completely different strategies for locating food. The first uses a strategy of high motor activity, but it is in the second group that more extensive neuronal networks are observed, suggesting that the behavioural inhibition of fruit flies is related to more intensive processing of signals from the environment [19].

Some researchers believe that the primary determinant of animal disposition is the degree to which individual behaviour is dependent on environmental stimuli. While some individuals pay attention to environmental cues and quickly adapt their behaviour to the prevailing conditions, others exhibit more rigid, routine behaviour. Such differences in response (also referred to as coping style, flexibility, plasticity) have been documented in more than 100 animal species (from insects to mammals) [18].

In the maze test, individual mice and rats were shown to differ in their responses to changes in the environment. Individuals that quickly created a routine (minor environmental changes did not affect them) performed relatively poorly under conditions of changing maze configuration. In contrast, those that were strongly influenced by minor changes performed well when confronted with changing maze configurations [20]. Also, great tits, which are reactive, readily adapt their foraging behaviour to a change in the feeding situation, while others stick to formerly developed habits [21]. Interestingly, in monkeys of the rhesus macaque species, it was shown that when sensitive (reactive, “uptight”) individuals were cared for by highly skilled mothers, their children became leaders in the herd [22]. It is supposed that “biological context sensitivity” in animals enables them to adapt to changing/stressful or highly supportive environments after birth. Such reactivity is an advantage in both extremes of circumstances.

Sensory processing sensitivity is considered in the context of the first of the outlined evolutionary strategies, i.e., as a sensitive type of disposition or, in other terms, “reactive” [18]. In any population, there is a constant, always smaller percentage of sensitive individuals, where the ability to perceive danger or opportunity that “low-reactive” individuals may overlook brings significant benefits to the population as a whole [23]. The strategy of stopping, observing and processing information is a way of learning, and remembering past situations allows one to react more quickly to danger at the next opportunity. A model by Wolf et al. [18] investigating the evolutionary reasons for the development of sensitivity strategies showed that both high and low sensitivity/reactivity occur with negligible benefit, while the benefit of reactivity for humans only occurs when they are in the minority. In addition, positive feedback mechanisms reduce the cost of sensitivity incurred by the body, i.e., the response is less costly for individuals who have previously been responsive. This explains why individuals vary consistently in their reactivity, in different contexts and over time. In contrast, the cost of reactivity, described as "overstimulation" or "overload" of the nervous system, may be a risk factor for the development of symptoms of psychiatric disorders.

Sensitivity of sensory processing as a temperament trait

There is more than one successful survival strategy within a species, including among humans. It is difficult to determine whether exploration on the one hand and quiet vigilance on the other, which can lead to retreat/avoidance, represent a continuum or completely separate groups of behavioural styles conditioned by relatively fixed personality traits inherited from ancestors (temperament). The SPS trait refers to and partially overlaps with existing temperamental constructs but is not identical with them. In the literature, there are references to the concept of introversion [2], shyness [4], Gray's concept of the behavioural inhibitory system (BIS) [3], and neuroticism according to Costa and McRae's five-factor Big Five model [5].

Eysenck's (1991) theory of introversion describes the balance between inhibition and stimulation in the central nervous system (CNS), where introversion is characterized by higher reactivity, lower threshold of excitability and ease of generating an arousal state. Introverts should protect themselves from over-arousal, as they are observed to have slow inhibition, while extroverts, characterized by faster reaction inhibition processes, generally need to be aroused to avoid boredom. To date, much research has been conducted on introversion in adults, inhibition in children, and shyness in both age categories [1]. There are numerous physiological differences that are associated with this behavioural strategy/trait in humans. Among other things, introverts show greater lability in the context of Pavlovian conditioning (the ability of the central nervous system to process information quickly) [24] and greater electrodermal lability [25]. Similarly, significant physiological and cognitive differences were found among "inhibited" and "uninhibited" children. The former manifest less spontaneous conversations and greater distance with unfamiliar adults, in play with peers, and less often in playing with a new toy. They present atypical fears, greater muscle tension in the vocal cords and sympathetic reactivity. They exhibit higher urinary norepinephrine and cortisol concentrations, higher blood flow and more intense bioelectrical activity in the right cerebral hemisphere region. Infantile colic, constipation, insomnia, allergies and irritability are more common [26].

SPS partially overlaps with the concept of introversion, but 70% of HSPs are introverts, 30% are extroverts, and many introverts are not highly sensitive [1]. Highly sensitive individuals are characterized by greater neuroticism and less extroversion, but are more easily put in a positive mood [8], which may be related to the occurrence of high emotional reactivity and sensory sensitivity. The relationships between high sensitivity, introversion and shyness are further modified by other factors, such as negative early childhood experiences, attachment styles, other personality traits, parental behaviour or creativity [27–29].

Gray [3] proposed an alternative theory, describing two systems in the brain as the cause of fundamental personality differences. The first is the behavioural activation system (BAS), which includes catecholaminergic-sensitive pathways, particularly dopamine. This system is sensitive to reward and to punishment avoidance, which determines goal-directed behaviour and positive feelings in the presence of signals of impending gratification. It is particularly active in neurotic extroverts (described by Gray as impulsive) and less active in stable introverts. The second system is the behavioural inhibitory system (BIS), which is related to serotonergic activity and involves the septal-hippocampal system and the brainstem, whose pathways run to the neocortex in the frontal lobe. The BIS system is characterized by sensitivity to punishment, to lack of reward and to novelty. It is particularly active in neurotic introverts (described by Gray as anxious) and less active in stable extroverts. According to Aron's nomenclature [7], the BIS system can be regarded as an automatic pause-to-check system. Understanding SPS in the context of Gray's theory is not just a simple identification with the predominance of BIS system activation. Each system is characterized by its specific potency, so highly sensitive individuals may function in two varieties. Some will be characterized by a moderately strong control pause system with a much weaker activation system, while others will have a strong control pause system with an equally strong activation system, resulting in a narrow window of optimal functioning and ease of generating an overload state [7].

SPS shares many traits with neuroticism as described by many personality models, the best known of which is the so-called Big Five model [5]. The relationship between SPS and neuroticism in most studies is significant, but points to the distinctiveness of the two traits. The authors emphasize that SPS is originally associated with ease of arousal, including due to positive stimuli, and must not be confused with negative emotionality/neuroticism [1, 28, 30, 31]. Moreover, SPS is not just a combination of introversion and neuroticism traits, and early childhood experiences are also an important factor influencing the intensity of these traits [32].

Sensitivity of sensory processing and environmental factors

Environmental factors are described in terms of modulators of trait expression and severity. Among the best studied environmental factors that form a complex model of the interaction between innate and biological factors and personality, behavioural and functioning traits are early childhood experiences, attachment styles and parenting styles, and they correlate with SPS and related traits such as introversion or neuroticism, as described in previous chapters [33–36].

A study by Aron and Aron [1] found that adult HSPs with a history of unhappy childhood score higher on negative emotionality and social introversion, while HSPs reporting happy childhood differ little in this regard from adults with low sensitivity. Booth et al. [34] reached similar conclusions, indicating that negative childhood experiences affect HSPs more than non-highly sensitive individuals, resulting in significantly lower levels of life satisfaction in adulthood. No differences were found between the highly and non-highly sensitive groups regarding life satisfaction for positive childhood experiences. In another study, Aron et al. [37] reported slightly different findings, where highly sensitive individuals who reported a difficult childhood scored particularly high on measures of negative affect, but HSPs without such experiences scored particularly low on this measure.

High SPS may be associated with greater benefits from positive experience. A six-month longitudinal study assessing SPS in preschool-aged children found that the highly sensitive ones were more responsive to changes in parental behaviour, predicting externalizing behavioural problems when parenting becomes more negative, and decreasing externalizing problems when parenting improves and becomes supportive [38]. Lionetti et al. [39], in a study of children ($N = 292$) aged about 3.7 years, observed that SPS was relatively different from observed temperament and interacted with both low and high parental quality in the development of behavioural problems and social competence. The same researcher, in an earlier study [39], observed greater changes in positive affect in adult HSPs who were shown a mood-inducing music video, compared to those reporting low sensitivity.

A relationship between HSPs and the work environment was demonstrated. In the Job Demands-Resources (JD-R) model, it was shown that SPS can be viewed as a factor of personal sensitivity/susceptibility and a personal resource that improves the motivational process. The EOE and LST dimensions strengthen the relationship between demands at work (i.e., workload and emotional demands) and emotional exhaustion, while only the LST strengthens the relationship between resources at work (i.e., task autonomy and social support) and supportive behaviour for the benefit of others. The SPS in juxtaposition with the JD-R indicates that personal factors can act as both a vulnerability factor and a personal resource, depending on the nature of the perceived work environment [40]. Another study found positive behavioural implications among highly vulnerable individuals when dealing with the complexity of the work environment [41].

Western culture promotes ideas of independence, openness, while Eastern culture puts the general welfare and politeness first, which may affect the perception of HSPs by those around them and the demands placed on them. HSPs process stimuli in more detail and pay more attention to them, so they are less likely to show cultural differences in the perceptual processing task, as demonstrated using fMRI [42].

Ueno et al. [43] showed an effect of age on the intensity of SPS features, regardless of gender. They observed a decrease in the dimensions of EOE (ease of excitement) and LST (low threshold of arousal) with age, while Aesthetic Sensitivity (AES), considered a positive aspect of high sensitivity, increased with age.

Sensitivity of sensory processing and biological factors: neuronal and genetic correlates

Neuroimaging findings provide a basis for recognizing the distinctiveness of the SPS construct from other temperamental traits. SPS results from characteristic brain functioning not only in limbic areas responsible for emotions but also in higher brain structures responsible for consciousness, attention processes, memory consolidation, planning, integration of sensory stimuli, physiological homeostasis, deliberative cognition, and empathy.

Highly sensitive people show greater activation of brain areas associated with awareness, integration of sensory information, empathy and action planning (including cingulate gyrus, insula, inferior frontal gyrus, middle temporal gyrus and premotor cortex) in response to the sight of sad or happy images [44]. Using fMRI, a correlation has been shown between scores obtained on the HSP scale and increased connectivity within the ventral and dorsal attention networks, the limbic network, and between the hippocampus and precuneus (involved in episodic memory formation) in adults. An inverse correlation was shown for intensity of the SPS trait and connectivity between the amygdala and the periaqueductal gray matter (involved in generating feelings of anxiety) and the hippocampus and insula (involved in habitual cognitive processing) [45]. In response to subtle changes in visual scenes, HSPs showed significantly greater activation in the brain regions involved in high-order visual processing (right claustrum, occipitotemporal areas, bilateral temporal and medial, and posterior parietal regions) and in the right cerebellum [15].

A meta-analysis [46] compared patterns of activation and deactivation of CNS areas in fMRI among HSPs and individuals with autism spectrum disorders, schizophrenia and post-traumatic stress disorder. In emotional, social and perceptual contexts, HSPs have shown activation in the neural structures involved in reward processing (ventral tegmental area and substantia nigra), homeostasis and pain control (hypothalamus and periaqueductal gray matter), self-others processing, and empathy (inferior frontal gyrus and the insula), awareness and reflexive thinking (temporoparietal junction) and self-control (prefrontal cortex), while in the remaining groups it was shown inactivation or no change in these areas.

A study by Wu et al. [47] using fMRI assessed the neural basis of the SPS trait. Individuals with high EOE were more likely to report depressive symptoms under stress, with EOE significantly positively correlated with gray matter volume of the right cerebellar hemisphere and negatively correlated with gray matter volume of the right dorsal anterior cingulate cortex. In addition, the gray matter volume of these two areas moderated the association between stress and depression. These findings suggest that structural abnormalities in these regions may account for the frequent experience of intense emotional reactions by people with high EOE, and that the accumulation of negative emotions in response to stress may lead to an increased likelihood of depressive symptoms.

According to Aron [1], the main difference at the level of nervous system biology between the concepts of SPS and neuroticism or inhibition, relates to the involvement of the frontal cortex in key processes responsible for the characteristics of SPS [1]. This is supported by the only study to date using diffusion tensor imaging (DTI) [48]. The results suggest that heightened sensory processing in HSP subjects may be influenced by white matter microstructure in specific cortical regions. Although previous fMRI studies have identified most of the areas identified in the study, the DTI results place new emphasis on brain areas associated with attention and cognitive flexibility, empathy, emotions, and primary levels of sensory processing, as in the primary auditory cortex.

Genetic studies have evaluated associations of the SPS trait with polymorphisms of genes related to serotonin, dopamine and cortisol. Psychiatric genetics focuses on finding risk factors for mental illness, with indications that “susceptibility genes” may simultaneously function like “plasticity genes”. It is worth noting that only two primate species fill different ecological niches – humans and the rhesus macaque, and what unites them and distinguishes them from other primate species is the presence of a short allele of the serotonin transporter gene (5-HTTLPR) in some individuals. High SPS manifests phenotypic similarity to the 5-HTTLPR polymorphism, as revealed by greater sensitivity to environmental stimuli [49] and a predisposition to depressive-anxiety symptoms. Licht et al. [50] showed no association between common polymorphisms of the human 5-HTT gene (SLC6A4), 5-HTTLPR and rs25531 and SPS traits in a group of healthy adults. Also, the inclusion of psychological distress as a co-variable had no significant effect on this relationship. However, the nature of serotonergic transmission in HSPs requires further study.

Chen et al. [51] examined 98 polymorphisms associated with the dopamine system and identified 10 loci on seven genes that were present in HSPs. The study found that the dopaminergic system accounted for about 15% of the variance in HSPs. Polymorphisms in the TH, DbH, SLC6A3, DRD2, NLN, NTSR1, NTSR2 genes were identified as being associated with high susceptibility. In a subsequent report, the same researcher [52] identified reduced homogeneity of regional spontaneous activity in the praecuneus, which was correlated with the intensity of the SPS trait and the activity of dopamine-related genes.

Zeng et al. [53] demonstrated an association between high SPS and the rs10062367 polymorphism of the corticotropin releasing hormone binding protein (CRHBP) gene, indicating its potential role as a marker of susceptibility to psychiatric disorders.

The only study of the relationship between telomere length and SPS in a group of 82 healthy adolescents found that higher SPS values correlated negatively with telomere length, after adjusting for gender, socioeconomic status, age and body mass index, and negative effect of stress before the study [54].

Sensitivity of sensory processing and mental disorders

High sensitivity is an innate, biologically determined trait that is a “modulator of development”, that is, it influences the formation and functioning of an individual depending on environmental conditions. It causes paying more attention to details, taking in and processing more information and stimuli, which can lead to more accurate predictions and actions. Sometimes, however, this strategy does not have beneficial effects and can lead to nervous system overload resulting in overstimulation, impaired cognitive functioning and fatigue.

High SPS is a risk factor for psychiatric disorders, especially in the context of exposure to adverse environmental factors. Most studies have examined the association of SPS with symptoms of depression and anxiety. Liss et al. [55] in a study of college students ($N = 213$) showed that SPS levels can be correlated with anxiety and reported depressive symptoms. The severity of depressive symptoms was higher in HSPs who experienced low-quality parental care, while it was not associated with SPS when parental quality was good. In contrast, Neal et al. [56] showed that higher intensity of the SPS trait in healthy individuals may be associated with higher levels of anxiety but not depression.

Liss et al. [12] examined the relationship between three sensory processing sensitivity factors and autism symptoms, alexithymia, anxiety, and depression. EOE and LST were associated with anxiety and depression, poorer social skills, attention to detail and poorer communication (autism symptoms), and difficulty describing and identifying feelings (alexithymia symptoms). The AES factor manifested other determinants, i.e., it was associated with increased anxiety and greater attention to detail, but people with high AES were less likely to exhibit outward-oriented thinking (the alexithymia component) and were less likely to have communication deficits. A study by Dinç et al. [57] confirmed the relationship between childhood trauma and psychopathological symptoms (depression, anxiety, low self-esteem, somatization, and hostility), and the variables mediating this relationship were SPS and alexithymia. The relationship between SPS trait and alexithymia was confirmed independent of childhood trauma.

It is assumed that high SPS is a hereditary factor in susceptibility to shyness. The results of a study by Hofmann et al. [58] conducted on a group of people with social phobia showed that this construct is not directly related to social anxiety but is strongly correlated with harm avoidance and agoraphobia symptoms. Individuals with the generalized subtype of social phobia reported higher levels of SPS than those with the non-generalized subtype. These preliminary findings suggest that sensitivity to sensory processing is uniquely associated with the generalized subtype of social phobia. HSPs have also been shown to be predisposed to the occurrence of nightmares [59] and to selective mutism in children and adolescents [60].

Several studies have been published on the relationship between HSPs and anxiety during the COVID-19 pandemic, with high HSPs shown to be associated with higher levels of health anxiety during the pandemic [61], and in adolescents associated with the risk of internalizing problems [62]. In contrast, other studies have found that higher SPS is not necessarily a risk factor for the development of psychopathological symptoms if individual resilience can be increased [63].

One study (N = 274 subjects) has been published, confirming an association between features of SPS and attention deficit hyperactivity disorder [64]. One study investigated the association of SPS with seasonal affective disorder [65], where in a small group (N = 31), individuals in both remission and symptomatic phases showed higher intensity of SPS features compared to the control group, and during winter depression, intensity of SPS trait was elevated compared to summer. High SPS was present in 25% of patients, compared to 5% in the control group. In addition, the study found that higher intensity of SPS features in summer was associated with more severe depressive symptoms in winter.

An association was found between certain features of SPS and personality disorders: avoidant and borderline personality. Both personality types showed a general tendency to be easily overstimulated by strong sensory stimuli, with those with borderline showing greater sensitivity to artistic stimuli and reporting a more frequent "rich inner life", while those with avoidant personality were more likely to control and avoid negative stimuli [33]. Another study found that SPS and sensitive narcissism were significantly related constructs, suggesting that HSP individuals may be more likely to use narcissistic self-regulation strategies [66]. One study found that the intensity of the SPS trait was associated with the presence of anomalous and paranormal experiences during life [67].

An association between SPS and risk of professional burnout has been demonstrated [68], with a higher emotional reactivity index being associated with increased burnout symptoms, while the trait "sensitivity to subtleties" showed the opposite effect, which may indicate its protective role.

There are single studies investigating the link between SPS and somatic illnesses. A higher frequency and intensity of SPS features were shown in the group of people with type I diabetes [69]. Another study indicated a greater intensity of the SPS trait in parents (with a predisposition to atopy) of children with atopic dermatitis [70]. In general, HSPs report worse physical well-being, which correlates most strongly with EOE and LST dimensions [71].

Therapeutic interventions to increase resilience and reduce symptoms of depression and anxiety in HSPs include school programmes, mindfulness techniques, mindfulness training or nature-based programmes, among others [72–74]. A sense of coherence, that is, an individual's perception that stressors are relevant to his or her life, understandable and manageable, can reduce the severity of depressive symptoms and be a resilience factor. Yano et al. [75] in a cross-sectional study examined the effect of sense of coherence on the relationship between SPS and depressive symptoms among college students (N = 430). The results showed that a strong sense of coherence moderated the association between SPS and depressive symptoms. A study of 11.5-year-old girls (N= 363) showed that those who demonstrated high SPS achieved greater benefits from a school-based depression prevention programme (based on cognitive behavioural therapy concepts and positive psychology techniques) compared to girls with lower levels of SPS. Girls scoring particularly high on the HSP scale showed a significant reduction in depressive symptoms, which was evident after 6 and 12 months of follow-up, while girls with low sensitivity showed no significant changes [11]. Kibe et al. [76] demonstrated the effectiveness of a school-based programme to increase psychological resilience among students. The intervention was effective in increasing overall self-efficacy, and those with high SPS, who had significantly lower well-being scores at baseline, responded more positively to the intervention, achieving significant improvements in reducing depression severity and increasing self-esteem.

Recapitulation

SPS is a new complex multifactorial temperament model that refers to stronger and deeper information processing, strong emotional reactions and empathy, sensitivity to subtleties in the surrounding world, and susceptibility to overstimulation. This trait is not the same as the well-established concepts of neuroticism or introversion in psychology but is associated with high emotional reactivity. It influences the formation and functioning of the individual, acting both as a risk factor and a protective factor, depending on environmental conditions. Under supportive conditions, it can improve the individual's resilience, while in an unfavourable environment it can increase the risk of developing mental disorders. The dispositional issue called sensory processing sensitivity is important and will be explored in the field of mental health and disorders in the years to come. To date, there have been no studies on the association of SPS with psychotic disorders, recurrent depressive disorder or bipolar affective disorder (BD). Future research directions on SPS and BD seem particularly interesting, since in this disorder, according to R. Post's concept of stages of the disease course and kindling, SPS could act as a potential risk factor for the development of the disorder and a predictor of efficiency of specific therapeutic interventions. Given the approximately 30% prevalence of the SPS trait in the general population, further research into the predisposition to the development of psychiatric disorders in HSPs, the role of preventive factors and the development of specific therapeutic interventions is advisable.

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