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## **The Highly Sensitive Child as a challenge for education – introduction to the concept**

### **Summary**

The main aim of this paper is to summarize available findings related to the subject of high sensitivity from both the educational and parenting perspectives. According to the authors of the concept of Sensory Processing Sensitivity (SPS), between 15% and 20% of the population exhibit such traits, therefore one has to say that it is necessary to raise the awareness of this subject amongst parents and teachers. High sensitivity may exhibit itself in many ways, depending on the environmental and other temperamental conditions. Understanding its main characteristics (DOES) will allow one to appreciate the potential of this condition instead of focusing on its deficiencies. Such a perspective opens up possible avenues of supporting the Highly Sensitive Child's resources by both parents and teachers.

A review was carried out to answer a research question by collecting and summarizing theoretical and empirical evidence that fits pre-specified eligibility criteria. The study selection criteria was to find literature/paper reviews and primary studies published in indexed journals included in various databases and focused on Sensory Processing Sensitivity directly, transdisciplinary and holistic approaches were central to the process. In the research strategy, the following databases were consulted: PSYCinfo, Scopus and PubMed. The keywords *sensory processing*, *sensitive*, *environmental sensitivity*, *education* were placed in all electronic databases and set to be found in the titles,

abstracts or keywords of the documents. No limits on dates were established. At the preparation stage, articles relevant to the topic were selected and supplemented with publications related to child development and educational context. The search was conducted from December 2018 to July 2019.

**Keywords:** highly sensitive child, children's development environment, early education, environmental sensitivity, sensory processing sensitivity

**Słowa kluczowe:** wysokowrażliwe dziecko, wczesna edukacja, warunki do rozwoju, wrażliwość środowiskowa, wrażliwość przetwarzania sensorycznego

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## Introduction

The subject of sensitivity is described in the psychological literature in different ways. Developmental psychology emphasizes child sensitivity first and foremost as readiness or susceptibility to specific influences, which aim to develop certain functions or to perfect certain skills. In this case, sensitivity is described with reference to the interaction with the environment, which involves the child's traits, environmental resources, as well as the quality of the child's relationship with the environment (Brzezińska 2003).

High sensitivity in children may be perceived by parents and teachers as a dysfunction or a deficit. A child whose many reactions differ from those of its peers becomes a concern and parents may worry about its ability to cope with the reality of preschool and school. However, high sensitivity ought to be seen as the child's individual resource, its potential, indeed some papers describe it as being an advantage (Belsky, Pluess 2009), whose appearance requires the provision of adequate supporting conditions.

One particular proposition is a concept proposed by Elaine Aron, who has promoted the term Highly Sensitive Child to describe a group of children whose functioning is described by the biologically determined by and modified by the environment trait of Sensory Processing Sensitivity. In other words, Sensory Processing Sensitivity is a feature of temperament, and children with a high level of it were identified by Aron as Highly Sensitive Children.

## The characteristics of high sensitivity

Aron distinguishes four aspects of high sensitivity, which may be understood as personality features (Aron 2002). In order to classify a person as highly sensitive, all four criteria have to be met. According to the author, if a child does not possess one of the

four characteristics, in all likelihood they are not highly sensitive. It has been proposed that these characteristics should be represented by the acronym DOES. The acronym was created by arranging the first letters of high sensitivity characteristics, namely:

- D – *Depth of processing*;
- O – *Overstimulation (the ease of being overstimulated)*;
- E – *Emotional reactivity connected with empathy*;
- S – *Subtle stimuli (sensitivity to subtle stimuli)*.

### ***D – Depth of processing***

Depth of processing refers to the amount of detailed information processed in relation to an object, information or stimulus. Fergus Craik (2002) stated that “shallow processing” is the recognition of a stimulus – paying attention to it. It is a process that originates from a focus on the “superficial” features of a given object and proceeds from its recognition, to assigning it importance, interpreting the information, and referring to previous experiences and memories.

Despite the concept of depth of processing being described by Craik and Lockhart, a clear indicator has not been specified. As a result, it is not yet obvious how to measure this trait (Craik 2002). To date, Aron et al. (2012) has classified depth of processing as one of the HSC dimensions. One of the definitions reads as follows: “Deeper processing of this sensory information, relating it to the past and projecting its consequences into the future” (Aron et al. 2012: 6). Patterson and Newman have described this process as the ability to change an attitude or behaviour after failure – the person learns from the failure or feedback received and changes their behaviour (Patterson, Newman 1993).

Michael Robinson, Sara Moeller and Adam Fetterman (2010) studied the response to failure and distinguished the term “adaptive self-regulation”. This means that a person, after receiving a negative feedback, “stops”, reflects upon it and changes the mechanism or way of accomplishing a task. That ability to reflect allows one to distinguish the person with SPS (someone who “stops” to reflect and adapts) from someone characterized by impulsive behaviours, neuroticism or introversion (Robinson et al. 2010). Experiments conducted by Robinson et al. (2010) were commented upon by Aron et al. (2012) as being the closest to capturing the phenomenon of general sensitivity.

Depth of processing manifests itself with the following features (Aron, Aron 1997; Aron 2002; Acevedo et al. 2014; Boterberg, Warreyn 2016):

- empathy and sensitivity towards others,
- conscientiousness in behaviour;
- intensity in experiencing feelings;
- vivid dreams and a rich imagination;
- a tendency to reflect upon various activities in detail;
- awareness of the long-term consequences of their behaviour;
- a longer processing time of new information compared to peers;

- more effective learning from own experiences;
- drawing conclusions from experiences in order to increase efficacy;
- apparent slowdown in activity and inhibition – observing the situation before participating in it;
- asking “deep”, thought-provoking questions;
- using complicated words, demonstrating an above average ability compared to peer group;
- smart sense of humour;
- difficulties in making decisions due to considering too many options;
- slow (compared to less sensitive peers) adaptation to new people and situations (due to the desire to carefully observe them and reflect upon them).

When parents or teachers consider the high sensitivity of the child in their care, they most often point out the ease of overstimulating the child, however, special attention should be paid to the depth of processing (cf. Aron 2002). The presence of this feature results in the characteristic manifestations of high sensitivity as well as providing a possible guide to potential methods of parental and educational support.

### ***O – Ease of being overstimulated***

Another characteristic feature of Highly Sensitive Children is the ease of overstimulation. When children are acutely aware of what is happening within them and around them, and process these situations including the actions and behaviours of other people more deeply and more thoroughly than their peers, they are also more prone to physical and mental fatigue than children who process fewer stimuli and less information. Highly sensitive children notice everything new and think about it more intensively than their peers. Therefore, the ease of overstimulation as it is described by Aron (2002) is the natural consequence of deeper, more thorough processing. This consequence is often unpleasant, and difficult to manage for the child, and its effects are also difficult for parents and other adult caregivers to manage. A situation that is potentially attractive for children, e.g. trips, visits to play rooms may provide the child with too many stimuli. Their quantity and intensity can make it difficult for children to function properly (Aron 2002). In other words, highly sensitive children are disturbed by what goes unnoticed by other children.

The consequences of overstimulation may be:

- difficulties with falling asleep, waking up in the middle of the night;
- acute reactions to change, to pain;
- intense reactions to noise, cold, heat, artificial light, discomfort (e.g. sand in a shoe, wet clothing, a scratchy label);
- unwillingness to be in crowded places;
- the desire to play alone (independently);
- unwillingness to participate in team games;
- reluctance to speak in front of a class.

Highly sensitive children also have individual differences. Some children may lose their tempers, fly into rages, and try to avoid situations that overstimulate, irritate and overwhelm them, others withdraw and cannot focus on themselves, some other children divert their attention to other activities, such as watching TV, reading or remaining in their inner world. Overstimulated children may be very active at home, which gives the impression that they have attention deficits (however, their attention span is within the norm when they are not subjected to excessive stimulation); in critical situations, they may shout at others, some may withdraw, others somatise overstimulation through abdominal pain, headache or other physical symptoms. Each of these behaviours leads, however, to relaxation or to tension release (Aron 2002).

### *E – Emotional reactivity connected to empathy*

Another characteristic of highly sensitive people is also associated with the above-mentioned depth of processing. Emotions are a source of information about what is happening inside and outside the person. Emotions somehow suggest which aspect to focus on, what should be noted, what should be learned, what to pay special attention to, what requires a pause for reflection and what should be avoided. Sensitive children, due to their tendency to analyse thoroughly, with their greater interest in their surrounding reality, their superior ability for sharp observation, also react with greater emotional intensity (Aron et al. 2012). During the testing of highly sensitive people, the activation of brain regions responsible for memory, attention, awareness, and reflexive thinking may be observed (Acevedo et al. 2017). High empathy levels allow them to cope with the feelings of other people. A strong perception of emotions may lead, among others reactions to: outbursts of crying, reacting to the mood/mood change of an adult, a greater awareness of the emotions of others. In connection with strong emotions accompanying the performance of tasks to be assessed, highly sensitive children are perfectionists, they try to satisfy caregivers and overreact even when making the smallest mistake. They notice the suffering and stress of other people for example: peers, family members, strangers, sometimes even characters from cartoons or movies and animals (Aron 2002).

The emotional reactivity of highly sensitive people is combined with their high levels of empathy. In studies conducted by Bianca Acevedo and coworkers (2014) it was shown that a high level of sensitivity was associated with greater activity in the brain areas that correspond to consciousness, the integration of sensory information, empathy and preparation for an action in response to emotionally evocative social stimuli.

Attention should also be paid to the interactions of the features discussed. The HS child may feel overstimulated in a situation where for other non-HS children the stimuli would be natural, and would not significantly affect their reactions. Highly sensitive children are attentive to the moods of others. They are more easily irritated or made nervous by both the quantity and quality of the surrounding stimuli. The irritation of a small child (e.g. a baby) will affect the mood of an adult caregiver, and may be the reason for their

anxiety concerning or even fear for, for example, the child's health. The child, in turn, will respond to the adult's reaction with more intense emotions (due to their own high reactivity) (Aron 2002).

### ***S – Sensitivity to subtle stimuli***

Sensitivity to subtleties is identified as the awareness of details, subtle sounds, touch, smell and other delicate stimuli. There are people with exceptionally well developed sensory organs, however, Aron (2002) hypothesizes that, in HSP people, a higher level of thinking and feeling is behind their sensitivity to subtleties, which poses a difficulty when it comes to distinguishing this feature from depth of processing. In children, this characteristic is manifested, among other ways, through:

- paying attention to the changes in the appearance of people or places, e.g. change in the position of furniture;
- noticing subtle odours, due to which the child may not want to, e.g. go somewhere or participate in some activity;
- paying attention to subtle sounds (e.g. birds singing), complex music;
- noticing (and often reacting to) changes in the tone of voice, “short glances”, small gestures.

Sensitivity to subtleties is a feature that highly sensitive people may use in sport, interpersonal communication, in school. This feature makes it easier for them to interpret expectations, including those of their teachers. Aron (2002) underlines the fact that the awareness of subtleties can “disappear” when the child is overstimulated, tired and under pressure.

### **Benefits and drawbacks that may be associated with high sensitivity**

Numerous studies have demonstrated that high sensitivity itself is not a disorder, however, in negative, unfavourable conditions it may be correlated with numerous difficulties. The higher level expression of a trait may be related to psychopathology. The research carried out concerned the SPS relationship with (selected issues are presented): internalization problems, fear, increased levels of stress, the physical symptoms of poor health (with somatic illnesses), depression (a.o. Benham 2006; Liss et al. 2008; Bakker, Molding 2012; Boterberg, Warreyn 2016; Yano, Oishi 2018). It should also be noted that only some of these studies take into account the effects of interaction of specific difficulties and disorders with the SPS feature itself. In the studies in which the direction of the interactions was controlled, the role of interaction was confirmed (Greven et al. 2019).

Highly sensitive children are described as reactive, easily prone to stress, shy, inhibited in their behaviour. However, in a favourable environment, highly sensitive children perform better than their peers: they achieve better grades in school, have more constructive moral attitudes, higher levels of social competency, higher levels of self-regulation and

a greater sense of security resulting from experiencing the love of their families (Aron 2002; Pluess, Belsky 2013).

Studies concerning environmental sensitivity also emphasize the fact that SPS is important not only in achieving an understanding of maladaptation, the tendency to experience difficulties or the risk of developing subsequent dysfunctions but also for the understanding of optimal development or even the exceptional development of potential in a positive environment. High sensitivity does not only coexist with the tendency to experience difficulties (it is not just a risk factor for mental problems). Jay Belsky and Michael Pluess (2009) highlighted the selectivity of treating high sensitivity as a risk factor. They wrote about the variation in the level of influence of the environment and about the trait, commonly known as sensitivity, being an advantage, they were inclined to regard it in terms of resilience. Michael Pluess compared the reactions of highly sensitive people and people who are not highly sensitive, and arrived at the conclusion that mentally resilient (less sensitive) people are influenced to a lesser degree by either bad or positive events (Aron 2002).

The research suggests that SPS is also associated with:

- the positive aspects of functioning, such as the ability to induce a positive mood; including an increased positive affect following positive mood induction (Lionetti et al. 2018);
- increased social competencies in interaction and developing positive parenting styles (Slagt et al. 2018);
- reductions in the incidence of depression, violence and victimization as a result of positive intervention (Pluess, Boniwell 2015);
- increased activation in the major reward centres of the brain in response to positive stimuli, such as the smiling face of a partner or generally positive emotions (Acevedo et al. 2014);
- higher levels of creativity (Bridges, Schendan 2019);
- the development of talents (Gere et al. 2009; Rinn et al. 2018).

### **Children's development environment**

The environment in which highly sensitive children develop is particularly important. Particular attention should be paid to the role of the family environment and the school environment in the quality of functioning of highly sensitive children. Research concerning the quality of the educational environment and sensitivity indicates the occurrence of interaction. The research (Aron, Aron 1997) shows that highly sensitive adults who have an unhappy childhood perception, scored higher in the area of negative emotionality and social introversion. At the same time, highly sensitive adults who experienced a happy childhood did not differ in the severity of those features, from the population of non-highly sensitive individuals.

The studies of Boyce and colleagues conducted with the participation of highly reactive children indicate that HS children in a stressful home and school environment are



more likely to become sick and suffer more injuries. However, in a relatively less stressful environment, they suffer from injuries less often than their peers. He described these children as orchids, and non-highly sensitive children as dandelions (Ellis, Boyce 2008).

Subsequent research relevant to planning activities to support highly sensitive children concerns their functioning in the school environment.

Teresa C. Tillmann (2016) points out that sensory processing sensitivity (SPS), as a temperament feature that is associated with a deeper processing of sensory information, as well as behavioural responses to environmental stimulation and new situations, plays an important role in the educational context. Therefore, she conducted research with 456 students from grades 7 to 9 from two different types of German schools. The students answered questions related to the new version of the German HSP scale. The questionnaire used was enriched with additional variables: subjective school-related values or school-related self-efficiency. The results of the research conducted indicate, among other findings, the negative relationship between SPS and school-related effectiveness or student ratings. Despite some critical remarks regarding methodological problems, the current findings greatly enrich the existing literature concerning SPS in the school context and have important implications, especially in the current debate, about the need for an education based on the requirements of individual students (Tillmann 2016; Tillmann et al. 2018).

Achermann (2013, in: Tillmann 2016) examined how highly sensitive adults perceive their time spent at school. He analysed key aspects of the teaching process, checking what in retrospect was helpful in achieving school success. The results were similar to those obtained by Aron (2002). Research results indicate that:

- most HSP do not experience any school problems and bad grades because of the deeper content processing;
- the majority of highly sensitive people are perfectionists and expect a lot from each other;
- preferred learning environment and atmosphere: a quiet working atmosphere was important for proper focus and work; HSC prefer teaching through direct individual instructions, they do not like to appear in front of a group – however, if group work is used and preferred by the teacher, HSP prefer working with friends rather than with people who are unknown to them;
- the physical environment and its aspects, such as a colourful room, too much light or similar features also play an important role;
- the behaviour of HSP children resulting from overstimulation may be interpreted by the teacher as low motivation or attention deficits;
- new and unknown situations make the HSC feel uncomfortable;
- they prefer repetitive, structured lessons, rules and rituals; in unclear situations, without structure, HSP people become nervous, full of anxiety and it is difficult for them to maintain their balance;
- they are often tired after school;

- social life at school: close relationships are important for HSP, but they prefer a small circle of friends; larger groups and large spaces (like a school playground) are perceived negatively;
- conflicts have a negative impact on HSC, they may result in difficulties with maintaining their attention during lessons, and even later when they are already at home.

### **Implications for education and parenting**

From the perspective of the presented research and conceptual papers one may assume that high sensitivity represents a huge potential for children, which under supporting conditions will work for the child's benefit, alternatively, under detrimental conditions it will turn against the child and have a negative influence on the child's functioning. A highly sensitive and reactive nervous system may under beneficial conditions support the development of creativity, intuition and unconventional thinking. Under detrimental conditions, it may become overloaded and lead to disorganized behaviour, diminishing the child's productivity and lowering the child's self-esteem.

Creating the appropriate conditions for the development of a highly sensitive child requires parents and teachers to understand the child's needs and to help them to develop in four key areas: the development of self-esteem, a reduction in the feeling of shame, discipline, and the skilful acknowledgement of one's sensitivity (Aron 2002).

Self-esteem in highly sensitive children is usually inadvertently lowered. Susceptibility to criticism and a harsh critique of oneself are two factors shaping low self-esteem. A characteristic prediction of negative scenarios makes them look similar to people suffering from depression (Taylor, Brown 1988). Key tasks for both parents and teachers in this regard ought to be centred around helping the child to raise its self-esteem through acknowledgement and praise given for even the most inconsequential (from the parent's or teacher's perspective) accomplishments and initiatives, the use of a careful choice of words when giving feedback, and an emphasis of the child's strengths.

Highly sensitive children have a particular propensity for experiencing shame and feeling guilty. For this reason, it is necessary to avoid situations, which may give ground to the growth of the feeling of shame and self-blame. Highly sensitive children blame themselves for difficult situations more often than their peers. More situations cause shame. Both the parent and the teacher ought to make every possible effort not to put the child into situations, which make them feel shame or are perceived by the child as caused by her or him.

Research has confirmed that highly sensitive children internalize a moral code in a natural way. They find it more difficult to accept situations in which they are engaging in an activity associated with disapproval (e.g. breaking a toy) and have the feeling of not meeting other people's expectations (Kochanska, Thompson 1998). Because of this, parents and teachers must use their imagination in creative ways to avoid situations of punishment or scolding that may be perceived by the child as too harsh and will in turn, fail to have the

desired effect. Highly sensitive children are quicker to give in to the feeling of discomfort and lose patience much faster, and when this happens, they find it harder to obey parents or teachers. The prevention of such states is not a sign of yielding to the child's whims but a form of meeting his or her needs (Aron 2002).

The fourth key dimension of a highly sensitive child is an age-appropriate conversation about high sensitivity. Understanding their own sensitivity is not only conducive to the child's development of high self-esteem, but it also makes it possible to establish limits. Talking about the topic will enable the child to develop satisfying relationships without fear of rejection, with full awareness of the right to not undertake certain activities or to participate in those situations, which make them feel uncomfortable. In the process of collisions with obstacles-boundaries that arise in children's lives in the form of norms and rules, children strive to obtain some information about potential boundaries and the possibilities for their own influence. Having overcome an obstacle, children increase their "I" level, transforming the negative energy of a barrier into their own positive potential (Nikolskaya 2008).

In summary, it should be stated that the most appropriate forms of support for teachers and educators in preparing them for work with highly sensitive children are:

- equipping them with knowledge in the field of high sensitivity – helping them to understand how highly sensitive children differ from other children and what their needs are;
- equipping them with tools – specific styles and methods of working with highly sensitive children (familiarizing them with, among others, elements of temperamental based intervention and self-regulation, somatic education, mindfulness);
- providing access to specialists and practitioners supporting HSC children thereby enabling mutual learning and the comprehensive support of highly sensitive children.

## References

- Acevedo B.P., Aron E.N., Aron A., Sangster M.D., Collins N., Brown L.L. (2014), *The highly sensitive brain: an fMRI study of sensory processing sensitivity and response to others' emotions*. "Brain and behavior", 4(4), DOI: 10.1002/brb3.242, 15.12.2018.
- Acevedo B.P., Jagiellowicz J., Aron E., Marhenke R., Aron A. (2017), *Sensory processing sensitivity and childhood quality's effects on neutral responses to emotional stimuli*. "Clinical Neuropsychiatry", 6, <https://bit.ly/2rKhJDs>, 15.10.2019.
- Achermann E-M. (2013), *Unterrichtsqualitätsaus der Sichthochsensitiver Menschen*. Unpublished master's thesis. Internationale Hochschule für Heilpädagogik, Zürich, Switzerland, [https://ilias.hfh.ch/goto.php?target=file\\_6413\\_download&client\\_id=ilias-hfh.ch](https://ilias.hfh.ch/goto.php?target=file_6413_download&client_id=ilias-hfh.ch), 12.02.2019.
- Aron E. (2002), *The highly sensitive child: Helping our children thrive when the world overwhelms them*. Thorsons CLASSICS, Harmony, New York.
- Aron E., Aron A. (1997), *Sensory-Processing Sensitivity and Its Relation to Introversion and Emotionality*. "Journal of Personality and Social Psychology", 73(2), <https://bit.ly/2ZOIEEC>, 15.12.2018.

- Aron E.N., Aron A., Jagiellowicz J. (2012), *Sensory processing sensitivity: A review in the light of the evolution of biological responsivity*. "Personality and Social Psychology Review", 16(3), <https://bit.ly/2u4Zf1h>, 20.01.2019.
- Bakker K., Moulding R. (2012), *Sensory-Processing Sensitivity, dispositional mindfulness and negative psychological symptoms*. "Personality And Individual Differences", 53(3), DOI: 10.1016/j.paid.2012.04.006, 15.10.2019.
- Belsky J., Pluess M. (2009), *Beyond diathesis stress: differential susceptibility to environmental influences*. "Psychological Bulletin", 135(6), <https://bit.ly/36paFLS>, 15.12.2018.
- Benham G. (2006), *The Highly Sensitive Person: Stress and physical symptom reports*. "Personality and Individual Differences", 40, <https://bit.ly/2FfafLT>, 20.01.2019.
- Boterberg S., Warreyn P. (2016), *Making sense of it all: The impact of sensory processing sensitivity on daily functioning of children*. "Personality and Individual Differences", 92, <https://bit.ly/39uejWJ>, 20.01.2019.
- Bridges D., Schendan H.E. (2019), *Sensitive individuals are more creative*. "Personality and Individual Differences", 142, DOI: 10.1016/j.paid.2018.09.015, 15.06.2019.
- Brzezińska A.I. (2003), *Dzieci z układu ryzyka*. In: A. Brzezińska, S. Jabłoński, M. Marchow (eds.), *Ukryte piętno. Zagrożenia rozwoju w okresie dzieciństwa*. Poznań, Wydawnictwo Fundacji Humaniora.
- Craik F.I.M. (2002), *Levels of processing: Past, present... and future?*. "Memory", 10(5/6). DOI:10.1080/09658210244000135, 15.02.2019.
- Ellis B.J., Boyce W.T. (2008), *Biological sensitivity to context*. "Current Directions in Psychological Science", 17(3), <https://bit.ly/37t9H16>, 17.02.2019.
- Gere D., Capps S., Wayne M., Grubbs E. (2009), *Sensory Sensitivities of Gifted Children*. "The American Journal of Occupational Therapy: Official Publication of the American Occupational Therapy Association", 63, <https://bit.ly/37mDs3E>, 17.02.2019.
- Greven C.U., Lionetti F., Booth C., Aron E.N., Fox E., Schendan H.E., Pluess M., Bruining H., Acevedo B., Bijttebier P., Homberg J. (2019), *Sensory processing sensitivity in the context of Environmental Sensitivity: A critical review and development of research agenda*. "Neuroscience and Biobehavioral Reviews", 98, <https://bit.ly/2ZJ35ZM>, 17.02.2019.
- Jagiellowicz J., Aron A., Aron E. (2016), *Relationship Between the Temperament Trait of Sensory Processing Sensitivity and Emotional Reactivity*. "Social Behavior and Personality", 44(2), <https://bit.ly/39A5zy4>, 20.03.2019.
- Kochanska G., Thompson R.A. (1998), *The emergence and development of conscience in toddlerhood and early childhood*. In: J.E. Grusec, L. Kuczynski (eds.), *Handbook of parenting and the transmission of values*. New York, Wiley, <https://bit.ly/2Fb2xT0>, 20.03.2019.
- Liss M., Mailloux J., Erchull M. (2008), *The relationships between sensory processing sensitivity, alexithymia, autism, depression, and anxiety*. "Personality and Individual Differences", 45(3), <https://bit.ly/2SKxBkA>, 19.03.2019.
- Lionetti F., Aron A., Aron E.N., Burns G.L., Jagiellowicz J., Pluess M. (2018). *Dandelions, tulips and orchids: Evidence for the existence of low-sensitive, medium-sensitive and high-sensitive individuals*. "Translational Psychiatry", 8: 24, <https://go.nature.com/3co8Twn>, 10.05.2019.
- Nikolskaya O.S. (2008), *The affective sphere as a system of meanings that organize consciousness and behavior*. Moscow, MPGGU, <https://bit.ly/2u5H1g6>, 17.12.2018.

- Patterson, C.M., Newman, J.P. (1993). *Reflectivity and learning from aversive events: Toward a psychological mechanism for the syndromes of disinhibition*, "Psychological Review", 100(4), 716–736, <https://bit.ly/2MiYdoi>, 10.05.2019.
- Pluess M., Belsky J. (2013), *Vantage sensitivity: Individual differences in response to positive experiences*, "Psychological Bulletin", 139(4), <https://bit.ly/39x3qDp>, 14.04.2019.
- Pluess M., Boniwell I. (2015), *Sensory-Processing Sensitivity predicts treatment response to a school-based depression prevention program: Evidence of Vantage Sensitivity*. "Personality and Individual Differences", 82, <https://bit.ly/2SNE1j4>, 10.05.2019.
- Rinn A.N., Mullet D.R., Jett N., Nyikos T. (2018), *Sensory processing sensitivity among high-ability individuals: A psychometric evaluation of the highly sensitive person scale*. "Roeper Review", 40(3), DOI: 10.1080/02783193.2018.1466840, 10.10.2019.
- Robinson D.M., Moeller K.S., Fetterman K.A. (2010), *Neuroticism and responsiveness to error feedback: Adaptive self-regulation versus affective reactivity*. "Journal of Personality", 78, DOI: 10.1111/j.1467-6494.2010.00658.x, 20.05.2019.
- Slagt M., Dubas J.S., van Aken M.A., Ellis B.J., Deković M. (2018), *Sensory processing sensitivity as a marker of differential susceptibility to parenting*. "Developmental Psychology", 54(3), DOI: 10.1037/dev0000431, 13.05.2019.
- Taylor S.E., Brown J.D. (1988), *Illusion and well-being: a social psychological perspective on mental health*. "Psychological Bulletin", 103(2), DOI: 10.1037/0033-2909.103.2.193, 17.02.2019.
- Tillmann T. (2016), *The Role of Sensory-Processing Sensitivity in Educational Contexts: A validation study*. Unpublished master's thesis. Ludwig-Maximilians-Universität, München, Germany.
- Tillmann T., El Matany K., Duttweiler H. (2018), *Measuring Environmental Sensitivity in educational contexts: A validation study with German-speaking students*. "Journal of Educational and Developmental Psychology", DOI: 10.5539/jedp.v8n2p17, 17.06.2019.
- Yano K., Oishi K. (2018), *The relationships among daily exercise, sensory-processing sensitivity, and depressive tendency in Japanese university students*. "Personality and Individual Differences", 127, DOI: 10.1016/j.paid.2018.01.047, 20.01.2019.