



Trait sensory-processing sensitivity and subjective well-being: Distinctive associations for different aspects of sensitivity



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ABSTRACT

Aron and Aron (1997) introduced the personality construct of high sensitivity, characterized by a presumably physiological, overactive sensory-processing sensitivity. Their measure of high sensitivity, the Highly Sensitive Person Scale (HSPS), predicts negative life-outcomes. However, previous research questioned the unidimensional nature of the questionnaire, and proposed its division into two- or three-factor models, with a handful of items reflecting a distinct type of sensitivity. Two studies ($N = 154$ and $N = 118$) extended previous findings by showing that this distinct sensitivity subscale had the weakest correlations with the full HSP scale and its other subscales, and that it had a distinctive and more desirable pattern of associations with personality traits and well-being measures, compared to other sensitivities. Our findings suggest that not all sensory-processing sensitivities are associated with undesirable life-outcomes, and emphasize the value of developing sensitivity measures further.

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1. Introduction

There are many ways people experience and respond to their surroundings. Environmental inputs trigger the same senses in all, but the resulting sensations and perceived strengths differ across individuals. In 1997, Aron and Aron introduced the notion of highly sensitive people: people whose sensory-processing sensitivity (SPS) to environmental stimuli is strong enough to interfere with their daily lives. Multiple studies have linked SPS with maladaptive outcomes, such as higher anxiety and depression, poor social skills and avoidant personality disorder (Bakker & Moulding, 2012; Liss, Timmel, Baxley, & Killingsworth, 2005; Neal, Edelman, & Glachan, 2002). However, a limited number of studies investigated the association of SPS with more desirable life outcomes (Aron, 1996; Liss, Mailloux, & Erchull, 2008). In the present studies, we assessed two- and three-factor models of the Highly Sensitive Person Scale (see Evans & Rothbart, 2008; Smolewska, McCabe, & Woody, 2006) and their associations with well-being.

2. Sensory-processing sensitivity and highly sensitive people

Two strategies of dealing with environmental changes have been identified: approach and exploration of new stimuli, versus vigilance, assessment, and often avoidance of them (Aron & Aron,

1997; Smolewska et al., 2006). Aron and Aron (1997) proposed that the strategy characteristically selected depends on a person's SPS, the way sensory information is processed by the brain, with sensitive people typically selecting avoidance. They concluded that the SPS of highly sensitive people (top 15–20%) causes them to become overaroused and overwhelmed by sensory inputs, such as strong smells, loud noises, bright lights, and strong tastes. Aron (2004) claimed that such aversive effects are due to highly sensitive people engaging in deep processing of new information before taking action, allowing them to notice all the subtleties of stimuli. High sensitivity and hyperawareness of social cues lead to sensitive people's high autonomic arousal in situations that are moderately arousing for others. This frequent over-arousal causes highly sensitive people to be seen as less logical and meaningful in their actions, resulting in them experiencing lower self-efficacy and higher levels of alienation – all of which could potentially have negative effects on their academic, social, or work performances (Aron & Aron, 1997; Evers, Rasche, & Schabracq, 2008). However, when alone or in a peaceful environment, some highly sensitive people seem to be able to take advantage of their sensitivities (Aron & Aron, 1997). Aron (1996) theorized that some highly sensitive people excel in understanding, appreciation, and creation of culinary, musical, and visual arts.

3. The Highly Sensitive Person Scale as a personality measure

To assess SPS, Aron and Aron (1997) created the 27-item Highly Sensitive Person Scale. It consists of face-valid items, such as, "Are

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you easily overwhelmed by strong sensory input?” and was designed as a unidimensional scale that demonstrated adequate content, convergent, and discriminant validities, as well as good internal consistency. Aron and Aron (1997) found that the HSPS was modestly correlated with the Eysenck Personality Inventory’s introversion scale and interpreted this as evidence of its divergence with introversion. Specifically, they claimed that Eysenck’s (1990) model, which treats all facets of introversion as a consequence of cortical arousability, does not explain high SPS. Instead, Aron and Aron (1997) theorized that high SPS is one of the various manifestations of a strong behavioural inhibition system (BIS), although they did not test this empirically. Furthermore, the authors claimed that because introversion, neuroticism, shyness, and high SPS all have their roots in BIS, and because all are characterized by a predisposition to higher arousability and inhibition of approach behaviour, these similarities lead many to neglect distinctions among these personality dimensions (Aron & Aron, 1997). Therefore, the modest correlations between introversion, neuroticism, and high SPS can be interpreted as high SPS being only one element of the broader dimensions of neuroticism and introversion (see Eysenck’s PEN model and its hierarchical taxonomy of personality, 1990; Enns & Cox, 1997).

4. Types of SPS and their relations to personality traits and well-being

Even within sensitivity, the unidimensionality of the HSPS may neglect the potential for narrower facets. The scale lacks differentiation among types of sensitivities (e.g., sensitivity to pain, art, or negative feelings). This prompted Smolewska, McCabe, and Woody (2006) to conduct a factor analysis of the HSPS, and they proposed dividing the questionnaire into three separate subscales: ease of excitation, aesthetic sensitivity, and low sensory threshold. Ease of excitation is about becoming mentally overwhelmed by internal or external stimuli, the aesthetic sensitivity subscale assesses awareness of aesthetic stimuli, while the low sensory threshold subscale asks about unpleasant arousal in the face of external stimuli (Smolewska et al., 2006).

Subsequently, Evans and Rothbart (2008) used their temperament model and factor analyses to reinterpret Smolewska’s et al. (2006) subscales. They viewed two highly correlated factors (ease of excitation and low sensory threshold, $r = .70$) as reflecting generalized negative affect and sensory discomfort. Noting that not all remaining items of the HSPS clearly reflect aesthetic sensitivity, they created an alternative (yet empirically similar) subscale, and interpreted it as the temperament framework’s orienting sensitivity/openness dimension. Evans and Rothbart (2008) preferred a two-factor model of the HSPS based on conceptual, rather than purely statistical, reasons; their three-factor solution looked similar to Smolewska’s et al. (2006).

The factorial structure of the HSPS has utility to the extent that the different sensitivities correlate distinctly with other criteria, such as personality and well-being. Smolewska et al. (2006) found that BIS (as assessed by Carver & White, 1994 scale) was strongly associated with ease of excitation, but considerably less with the other two subscales. In contrast, the ease of excitation and aesthetic sensitivity subscales had a small association with BAS-reward responsiveness. Furthermore, it seems that the aesthetic sensitivity subscale may be the most distinct, as it exhibited a unique pattern of correlations with other personality traits. Only the ease of excitation and the low sensory threshold subscales were negatively correlated with sense of coherence, comprehensibility, manageability, meaningfulness, and self-efficacy – all of which have, in turn, been associated with outcomes such as alienation, work stress, displeasure (Evers et al., 2008), anxiety, depression (Bakker & Moulding, 2012;

Liss et al., 2005), poor social skills, poor attention to details, and difficulty describing and identifying feelings (Liss et al., 2008). Furthermore, only the excitation and threshold subscales were associated with avoidant personality disorder (Meyer & Carver, 2000), social phobia (Neal et al., 2002), and agoraphobia (Hofmann & Bitran, 2007). Also, when probing the relation between their Adult Temperament Questionnaire and two-factor structure of the HSPS, Evans and Rothbart (2008) showed that HSPS’ negative emotionality factor was unrelated to the HSPS’ and ATQ’s orienting sensitivity/openness scales. However, it was associated with more unfavourable outcomes, i.e. higher temperamental negative affect, sensory discomfort, and higher introversion and neuroticism scores. In short, some, but perhaps not all, highly sensitive people experience maladaptive outcomes.

In contrast, the aesthetic sensitivity subscale and orienting sensitivity/openness dimensions were related to more potentially beneficial outcomes, such as greater attention to detail, internally-oriented thinking, better communication skills (Liss et al., 2008), higher levels of extraversion, affiliativeness, and openness (Evans & Rothbart, 2008). Although the research in this area is limited, these findings support the view that, for some sensitive people, sensitivity does not necessarily have to be debilitating. Rather, it could enhance their complex inner lives, and possibly lead to higher subjective well-being.

We conducted two studies to further explore the potentially distinct patterns of correlations among the sensitivity facets, personality traits, and well-being. We expected to find that the full HSPS, as well as its ease of excitation and low sensory threshold subscales would show moderate and positive associations with measures of introversion, neuroticism, and behavioural inhibition. However, based on hints of the unique positive associations between the aesthetic sensitivity subscale (or orienting sensitivity/openness subscale) and life-enhancing characteristics, we predicted that they would exhibit different correlational patterns with personality, and positive associations with well-being.

5. Study 1 methods

5.1. Participants

We recruited two hundred psychology students to complete online questionnaires. Some participants were excluded due to not completing majority of the questionnaires. The final sample consisted of 154 undergraduate students ($M = 2.46$ study year, $SD = 1.04$), who were predominantly women (68%), between ages 17–68 years old ($M_{age} = 22.17$, $SD_{age} = 5.61$). All participants received class extra credit for their participation.

5.2. Procedure

The study was internet-based. Participants registered for a study called “personality and childhood environments”, and were then linked to a consent form and surveys (hosted at www.survey-monkey.com). Questionnaires appeared in the order described below.

5.3. Measures

5.3.1. Demographics

Participants completed a short questionnaire created by the investigator which assessed their age, sex, and their year of study.

5.3.2. Sensitivity

The SPS was assessed by the 27-item *Highly Sensitive Person Scale* (HSPS; Aron & Aron, 1997). Using a seven-point Likert scale

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