

Brief report

Affect sensitivity and affect regulation in dealing with positive and negative affect [☆]

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Abstract

Interactions between two types of affect sensitivity and two types of affect regulation were tested: low sensitivity to positive affect and high sensitivity to negative affect were expected to become maladaptive when self-motivation and self-relaxation are low, respectively. Consistent with expectations, specific Sensitivity \times Regulation interactions emerged: low sensitivity to positive affect (i.e., independent, schizoid-like personality) was only associated with reduced emotional well-being when self-motivation was low. High sensitivity to negative affect (i.e., self-critical, avoidant-like personality) was only associated with psychosomatic symptoms when self-relaxation was low. In a subsample, the same results were obtained longitudinally. Findings support the distinction between affect sensitivity and affect regulation. Furthermore, affect regulation can be differentiated into self-motivation and self-relaxation.

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1. Introduction

Imagine the following situations. You worked hard for a grant proposal and receive a clear rejection. The next day you get positive feedback for a paper that may be published after some minor revision. We propose that there are various primary and secondary

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reactions to these situations. People may not only vary in the strength of their initial response to positive and negative feedback (affect sensitivity) but also in their ability to self-regulate their initial affective responses (affect regulation).

1.1. Affect sensitivity

According to the theory of Personality Systems Interactions (PSI; Kuhl, 2000, 2001), many personality dimensions more strongly grasp the initial affective response than self-regulatory processes. For example, experimental analyses of the Big Five model have demonstrated systematic relationships with Gray's (1987) reward and punishment systems: extraversion is related to the reward system as indexed by better performance in reward trials (Gupta & Nagpal, 1978; Nichols & Newman, 1986), slower shifts of attention away from locations where points could be gained (Derryberry & Reed, 1994), and stronger experience of positive affect (Diener, Sandvik, Pavot, & Fujita, 1992). Neuroticism is related to the punishment system because it shows substantial loadings on a common factor along with behavioral inhibition and negative emotionality (Elliot & Trash, 2002). Thus, central personality dimensions can be conceived of as *sensitivity* to positive and negative affect.

In the present study, we investigated nonpathological analogues to personality disorders that were designed to capture sensitivity to positive and negative affect more purely than the Big Five (Kuhl & Kazén, 1997).¹ According to PSI theory, an independent, schizoid-like personality is associated with reduced sensitivity to positive affect whereas a self-critical, avoidant-like personality is associated with reduced sensitivity to negative affect (cf. Kuhl & Kazén, 1997). Consistent with this assumption, independent, schizoid-like personality correlates strongly negatively with extraversion, $r = -.57$, $p < .001$, and only moderately with neuroticism, $r = .20$, $p < .05$. In contrast, self-critical, avoidant-like personality correlates strongly with neuroticism, $r = .67$, $p < .001$, and only moderately negatively with extraversion, $r = -.28$, $p < .01$. Experimental data further support the affect sensitivity assumption. Independent, schizoid-like personality is associated with reduced associative learning between nonsense syllables and positive events (i.e., reward), $r = -.24$, $p < .05$ (cf. Kuhl, 2001, p. 943), and reduced positive emotional contagion through the partner (cf. Kuhl & Kazén, 1997). In contrast, self-critical, avoidant-like personality is associated with self-infiltration, $r = .43$, $p < .01$, and alienation from own preferences (cf. Kuhl & Kazén, 1997). In both phenomena, negative affect seems to play a causal role (e.g., Baumann & Kuhl, 2003).

To summarize, the above described personality dimensions assess how quickly a person enters a positive or negative affective state. The relationship between affect sensitivity dimensions and personality functioning has been well documented (Cordero, 2005; Costa & Widiger, 1994; McCrae & Costa, 1991). However, these dimensions do not assess the degree to which a person is able to leave a particular affective state once it is aroused.

1.2. Affect regulation

According to PSI theory, the ability to self-regulate one's feelings and thoughts is another important aspect of personality functioning. In contrast to single factor solutions

¹ Neuroticism scales include many sensitivity items (e.g., "I am easily frightened"), that presumably contribute to the relationship with Gray's (1987) punishment system. However, neuroticism scales also include items which, from our perspective, would involve affect regulation (e.g., "I am capable of coping with problems").

of “volitional strength” (e.g., Tice, Bratslavsky, & Baumeister, 2001), PSI theory differentiates the ability to reduce feelings of hopelessness and anxiety (i.e., self-relaxation) and to overcome feelings of listlessness (i.e., self-motivation). These self-regulatory abilities are assessed by two dimensions of state versus action orientation (Kuhl, 1994b): (a) *Failure-related action orientation* (AOF) is conceived of as the ability to reduce (downregulate) negative affect once it is aroused and to maintain or even increase self-access (self-determination) in face of threatening and painful experiences (self-relaxation). (b) *Decision-related action orientation* (AOD) is conceived of as the ability to self-generate (upregulate) positive affect in face of difficulties and problems (self-motivation) which should result in behavioral and volitional facilitation (Kuhl & Kazén, 1999).

Extensive research supports the conceptualization of state versus action orientation in terms of the ability to self-regulate affect (Brunstein, 2001; Koole & Jostmann, 2004; Kuhl & Beckmann, 1994). For example, Brunstein (2001) found a dissociation between affect sensitivity (i.e., neuroticism) and affect regulation in students over the course of a semester: whereas neuroticism was significantly correlated with negative affect at the *beginning* of the semester, self-relaxation (AOF) was associated with a significant reduction in negative affect over the course of the semester. Similarly, self-motivation (AOD) was associated with a significant increase in positive affect during the semester. Recent findings by Koole and Jostmann (2004) not only demonstrate that action-oriented individuals are characterized by the ability to downregulate negative affect in stressful situations, but that the mechanism underlying this ability operates on a sub-conscious level involving self-access as postulated by PSI theory (Kuhl, 2000; Kuhl, 2001, chapter 14).

The cited findings are consistent with the idea, that classical personality traits like extraversion and neuroticism on the one hand and self-regulatory abilities such as action versus state orientations on the other hand are functionally different dimensions that are best described in terms of *affect sensitivity* versus *affect regulation*, respectively. In the present study, we want to test the hypothesis that affect regulation is especially important when sensitivity to negative affect is high and/or sensitivity to positive affect is low.

1.3. Stressful life-events

Stressful life-events have been proposed as potential triggers of emotional problems (Scully, Tosi, & Banning, 2000). According to PSI theory, they can be differentiated into “demands” (e.g., goal conflicts, high task difficulty, and uncontrollability) presumably associated with reduced positive affect and “threats” (e.g., danger, major life changes, painful experiences, and self-worth threatening tasks) presumably associated with increased negative affect (Kuhl, 2001, p. 243 for further validation see Baumann, Kaschel, & Kuhl, 2005). These two types of stressors were assessed to control their impact on well-being.

1.4. Hypotheses

Our interaction hypothesis predicts that low sensitivity to positive affect (presumably associated with an independent, schizoid-like personality) is only maladaptive when self-motivation is low whereas high sensitivity to negative affect (presumably associated with a self-critical, avoidant-like personality) is only maladaptive when self-relaxation is low. As outcome variables, emotional well-being and psychosomatic symptoms were assessed.

2. Method

2.1. Participants²

Two hundred and fifty-four participants (134 women, 120 men) were recruited in five different institutions: (a) Three private psychiatric practices ($N=121$), (b) a psychosomatic clinic treating patients with affective and neurotic/somatoform disorders ($N=26$), (c) a dermatological clinic ($N=29$), (d) a rehabilitation clinic treating patients with chronic alcohol abuse ($N=16$), and (e) the University of Osnabrück ($N=62$). Participants' mean age was 37.9 years ($SD=11.9$, range 14–71). From the above listed institutions, two private psychiatric practices and the psychosomatic clinic gave consent in collecting symptom-specific data. Thus, a subsample of 69 patients (37 women and 32 men) filled out an additional symptom questionnaire. In this subsample, participants' mean age was 42.2 years ($SD=11.5$, range 19–71). Fifty-seven patients (26 women, 31 men) were available for a three-months follow-up.

2.2. Materials

A short version of the Personality-Styles-and-Disorders-Inventory (*PSSI*; Kuhl & Kazén, 1997) was administered. Example items on the relevant scales are: low sensitivity to positive affect (PA, i.e., *independent, schizoid-like*) “Emotional intimacy with others is rather unpleasant to me”, high sensitivity to negative affect (NA; *self-critical, avoidant-like*) “I am more quickly injured by criticism than others are”. The scales have sufficient internal consistency and a theoretically consistent pattern of correlations with clinical and non-clinical observations (Kuhl, 2001; Kuhl & Kazén, 1997). In the present study, internal consistencies (Cronbach's α) were $\alpha=.74$ for PA sensitivity and $\alpha=.76$ for NA sensitivity.

The Action Control Scale (*ACS-90*; Kuhl, 1994a) was used to assess decision-related (AOD) and failure-related (AOF) components of action orientation. The ACS-90 has sufficient reliability (Cronbach's $\alpha>.70$) and adequate construct validity (Kuhl & Beckmann, 1994). The theoretical distinction made between AOD and AOF components of action orientation is confirmed by the factorial structure of the ACS-90 (Dieffendorf, Hall, Lord, & Streat, 2000; Kuhl & Beckmann, 1994). In the present study, AOD and AOF had internal consistencies of $\alpha=.83$ and $\alpha=.85$, respectively.

Stressful life-events were assessed with two subscales (demands and threats) consisting of 10 items each. Example items are: *Demands* “I experience many conflicts between incompatible goals in my life,” *threats* “I have many painful experiences to cope with”. The scales load on orthogonal factors and show the theoretically expected correlations with positive and negative affect (cf. Kuhl, 2001, p. 243; see also Baumann et al., 2005). In the present sample, internal consistencies were $\alpha=.88$ for demands and $\alpha=.89$ for threats.

A 21-item self-report inventory (“Right now, I feel ...”) assessed the degree of positive and negative affect experienced (including items from Watson, Clark, & Tellegen, 1988; and additional affect descriptors). A global index of *emotional well-being* was computed by subtracting helplessness, listlessness, and arousal subscales from joy, relaxation, and activation subscales. The index had an internal consistency of $\alpha=.93$.

² Data selection was guided by the idea to recruit as many participants as possible during a fixed data collection period and to include as many different institutions as available in order to test the generalizability of the interaction hypothesis.

Psychosomatic symptoms were assessed with the German version of the Symptom Checklist (*SCL-90-R*; Franke, 1995). The subscales somatization, obsessive–compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism were computed into a global severity index (mean of all subscales).

2.3. Procedure

Non-patients received the questionnaires at the university of Osnabrück and were given an individual counseling on opportunities for personal development upon return of completed questionnaires. It took 30–45 min to complete the questionnaires. Patients were given the questionnaires as part of the standard anamnesis of the institution (i.e., as a pre-screening for psychological counseling). Participation was voluntary. No patient declined to participate in this initial screening.³ Follow-up questionnaires were assessed after three months.

3. Results

Hierarchical regression analyses were conducted with an affect sensitivity scale, an affect regulation scale, and a life stress scale entered in Block 1, their two-way interactions in Block 2, and the three-way interaction in Block 3. All predictor variables were standardized before computing interaction terms. Outcome variables were standardized as well.

3.1. Sensitivity to positive affect and self-motivation

The PA Sensitivity \times Self-Motivation \times Demands regression on emotional well-being yielded significant main effects of PA Sensitivity, $\beta = .20$, $t(3,250) = 4.24$, $p < .001$, Self-motivation, $\beta = .35$, $t(3,250) = 7.04$, $p < .001$, and Demands, $\beta = -.39$, $t(3,250) = -7.91$, $p < .001$, indicating their unique contributions to emotional well-being. More importantly, there was a significant PA Sensitivity \times Self-Motivation interaction, $\beta = -.16$, $t(3,247) = -3.49$, $p < .001$. As depicted in Fig. 1, low sensitivity to positive affect was associated with reduced emotional well-being for participants with low self-motivation. In contrast, high self-motivation was associated with emotional well-being irrespective of participants' initial sensitivity to positive affect.⁴ The PA Sensitivity \times Self-Relaxation \times Threats regression on emotional well-being yielded a significant PA Sensitivity \times Self-Relaxation interaction, $\beta = -.14$, $t(3,247) = -2.63$, $p < .01$. However, when entering both PA Sensitivity \times Affect Regulation interactions into the equation simultaneously, only the PA Sensitivity \times Self-Motivation interaction was significant, $\beta = -.14$, $t(2,247) = -2.81$, $p < .01$. Consistent with expectations, deficits in self-motivation were more crucial than

³ Eight participants did not complete an additional, symptom-specific questionnaire. There was no gender- or symptom-specific drop-out.

⁴ Similar and significant Sensitivity \times Self-Motivation interactions were obtained for willful (paranoid), self-critical (avoidant), and unselfish (self-neglectful) personalities presumably associated with reduced sensitivity to PA, according to PSI theory. Significantly reversed Sensitivity \times Self-Motivation interactions were found for agreeable (histrionic), intuitive (schizotypal), and optimistic (rhapsodic) personalities presumably associated with increased sensitivity to PA: Low self-motivation was not associated with ill-being for highly agreeable, intuitive and optimistic personalities.

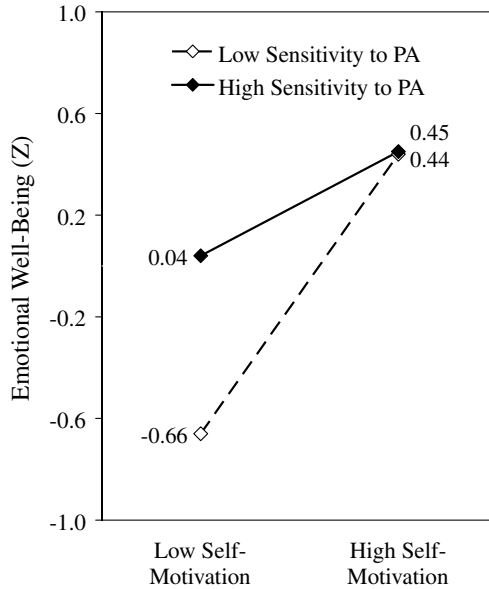


Fig. 1. Emotional well-being as a function of sensitivity to positive affect (i.e., independent, schizoid-like personality, reversed) and self-motivation (i.e., decision-related action orientation). ($N = 254$).

deficits in self-relaxation for reduced sensitivity to positive affect to amount to emotional ill-being.⁵

The regression analysis on emotional well-being after three months (t2), controlling for baseline (t1), yielded a significant PA Sensitivity \times Self-Motivation interaction, $\beta = -.27$, $t(1, 52) = 2.24$, $p < .03$. Consistent with expectations, low sensitivity to positive affect was associated with reduced emotional well-being at t2 for participants low in self-motivation ($M = -.28$) but not for participants high in self-motivation ($M = .35$). In contrast, high sensitivity to positive affect was associated with emotional well-being for participants low and high in self-motivation ($M = .52$ versus $M = .07$, respectively). The PA Sensitivity \times Self-Relaxation interaction was not significant.

3.2. Sensitivity to negative affect and self-relaxation

The NA Sensitivity \times Self-Relaxation \times Threats regression on psychosomatic symptoms yielded a significant NA Sensitivity \times Self-Relaxation interaction, $\beta = -.27$, $t(3, 62) = -2.10$, $p < .04$. As depicted in Fig. 2, high sensitivity to negative affect was associated with increased psychosomatic symptoms for participants with low self-relaxation. In contrast, high self-relaxation was associated with low psychosomatic symptoms even for participants with initially high sensitivity to negative affect.⁶ The NA Sensitivity \times Self-

⁵ Including a factor Group (patients versus non-patients) into the analyses, yielded significant main effects of group: non-patients reported higher emotional well-being than patients. However, there were no significant group interactions. The findings did not differ systematically for patients and non-patients.

⁶ A similar and significant Sensitivity \times Self-Relaxation interaction was found for the spontaneous (borderline-like) personality presumably associated with increased sensitivity to NA and PA, according to PSI theory.

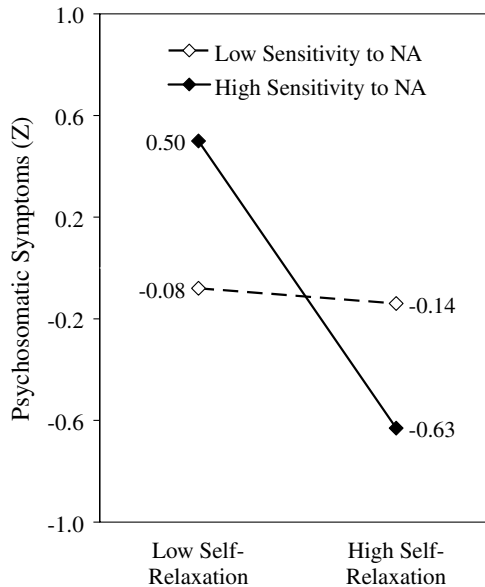


Fig. 2. Psychosomatic Symptoms as a function of sensitivity to negative affect (i.e., self-critical, avoidant personality) and self-relaxation (i.e., failure-related action orientation). ($N = 69$).

Motivation \times Demands regression on psychosomatic symptoms did not show a significant NA Sensitivity \times Self-Motivation interaction. Consistent with expectations, deficits in self-relaxation were more crucial than deficits in self-motivation for increased sensitivity to negative affect to amount to psychosomatic symptoms.

The regression analysis on psychosomatic symptoms after three months (t_2), controlling for baseline (t_1), yielded a significant NA Sensitivity \times Self-Relaxation interaction, $\beta = -.25$, $t(1, 52) = -2.13$, $p < .05$. Consistent with expectations, low sensitivity to negative affect was not associated with low psychosomatic symptoms at t_2 irrespective of participants' self-motivation (low $M = -.08$ versus high $M = -.20$). In contrast, high sensitivity to negative affect was associated with increased psychosomatic symptoms for participants low in self-motivation ($M = .46$) but not for those high in self-motivation ($M = -.53$). The NA Sensitivity \times Self-Motivation interaction was not significant.

3.3. Stressful life-events

In all of the above analyses, stressful life-events did not interact with affect sensitivity. Consistent with expectations, self-regulatory abilities were more crucial than stressful life-events for the link between affect sensitivity and health outcomes.⁷

⁷ Only critical (negativistic-like) and passive (depressive-like) personalities showed significant three-way interactions: Critical individuals with low self-motivation did not experience reduced well-being unless demanding life-events were present and passive individuals with low self-motivation (low self-relaxation) did not experience psychosomatic symptoms unless demanding (threatening) life-events were present. Interestingly, negativistic and depressive personality disorders are not included in DSM-IV. The present findings suggest that at least their non-pathological counterparts are indeed less personality-centered and more context-dependent than other PSSI dimensions.

4. Discussion

The present study investigated interactive effects of two types of affect sensitivity and two types of affect regulation. Independent (schizoid-like) and self-critical (avoidant-like) personality dimensions can be described in terms of sensitivity to positive and negative affect (Costa & Widiger, 1994; Gray, 1987; Kuhl, 2001; Kuhl & Kazén, 1997), that is, how quickly a person *enters* an affective state. In contrast, action orientation is conceived of as the ability to self-regulate positive and negative affect (Kuhl & Beckmann, 1994), that is, how quickly a person is able to *leave* an affective state once it is aroused. The self-regulatory aspect is especially important with respect to the stability and inflexibility of inappropriate patterns of functioning. For example, even a highly anxious and self-critical person is not likely to become stuck in his or her thoughts and feelings when being able to down-regulate negative affect eventually. In contrast, a highly anxious and self-critical person is likely to develop a stable and inflexible pattern of avoidance, anxiety, depression, and other symptoms when not being able to relax. In other words, anxiety, neuroticism, and similar personality dimensions may often produce negative affect as a *first reaction*. When the subsequent reaction results in downregulation of negative affect, psychosomatic symptoms are less likely to develop, whereas symptoms increase when there is no difference between primary and secondary reactions. Exactly this pattern of results was found in the present study: self-critical participants reported psychosomatic symptoms when they scored low on affect regulation.

Apart from the general finding that self-regulation is a moderator, the present results are consistent with important theoretical differentiations: in analogy to the differentiation between positive and negative affect (Watson et al., 1988) and behavioral activation and inhibition systems (Gray, 1987), personality dimensions can be differentiated according to their sensitivity to positive and negative affect or to reward and punishment (Costa & Widiger, 1994; Kuhl, 2001; Kuhl & Kazén, 1997). Similarly, self-regulation can be differentiated into the ability to overcome a lack of positive affect (AOD) and the ability to reduce negative affect (AOF) (Brunstein, 2001; Kuhl & Beckmann, 1994). Consistent with this differentiation, very specific Affect Sensitivity \times Affect Regulation interactions emerged. On the one hand, the independent, schizoid-like personality (presumably associated with low PA sensitivity) only showed reduced emotional well-being when the ability to self-generate positive affect was low. For an independent personality, deficits in self-relaxation were less crucial. On the other hand, the self-critical, avoidant-like personality (presumably associated with high NA sensitivity) only showed psychosomatic symptoms when the ability to reduce negative affect was impaired. There was no significant interaction between self-critical personality and self-motivation.

The present study is limited in several ways. First, the study used only self-report measures as opposed to more objective measures of affect sensitivity, affect regulation and health outcomes. Despite the method similarity, however, findings are not likely to be due to participants' mood at the time of assessment because the same results were obtained longitudinally. Second, outcome variables differed for positive and negative affect dimensions. Unfavorable combinations of primary and secondary reactions to positive affect were associated with emotional ill-being whereas unfavorable reactions to negative affect were associated with psychosomatic symptoms and not vice versa. Future studies may investigate the stability of this dissociation. Finally, stress was measured as a perception of demanding and threatening life events and may be confounded with personality. Although

this measure has yielded complementary results to an experimental stress induction in our previous research (Baumann et al., 2005) it would be interesting to test the sensitivity by regulation interaction after an experimental stress induction.

5. Conclusion

The findings contribute to the discriminative validity of the affect sensitivity and affect regulation constructs used and emphasize the importance of differential treatment approaches: learning self-motivation versus self-relaxation may have different priority for different personalities. The risk factors involved in emotional ill-being and psychosomatic symptoms can be better evaluated when personality assessment is complemented by an assessment of self-regulatory competencies.⁸

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⁸ For intervention purposes, self-regulation assessment can even be more useful if the constructs assessed in this study are further decomposed in their functional constituents (Kaschel & Kuhl, 2004). The volitional components inventory has been developed for this purpose (Kuhl & Fuhrmann, 1998) and is available in a clinical diagnostic system which assesses cognitive, affective, motivational and self-regulatory dispositions (Kaschel & Kuhl, 2004).

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