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The extraverted and the neurotic glasses are of different colors

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Abstract

Over the past decade evidence has accumulated showing relations between extraversion and positive affect and neuroticism and negative affect. However, little has been said about the source of these relations. The present study proposes cognitive evaluation as a potential source. Specifically, it is argued that when evaluating events, extraverts ascribe weight to their positive aspects and neurotics to their negative aspects, a difference that brings about corresponding differences in affective reactions. To explore this idea, 226 participants were asked to evaluate 30 hypothetical everyday events. Each event was evaluated along two independent scales referring to the positivity and the negativity of the event. The participants also completed a personality questionnaire and reported on their momentary affective state. The results supported the hypothesis by showing that extraversion correlated with a more positive (but not less negative) rating of events, whereas neuroticism correlated with a more negative (but not less positive) rating of events. Regression analyses ruled out the possibility that momentary affective state accounts for these effects. The study shows the different yet complementary ways through which extraversion and neuroticism contribute to reality perception. With that, a new dimension is added to the understanding of personality–affect relations.

Keywords: Affect; Cognitive evaluation; Extraversion; Neuroticism; Personality

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1. Introduction

When you react with strong feelings to an event, while your friend, who is sitting next to you observing the same event, remains calm, is it because she is holding back the expression of her emotions, or is it because she evaluates the event differently and experiences it as less dramatic than you? The former answer implies to differences in emotional expressiveness and in reactivity, whereas the latter answer suggests differences in perception and in evaluation of events. These answers represent distinct processes, but previous studies on individual differences in emotional experience have yet to provide an answer as to which process accounts for the difference in reaction (e.g., Larsen & Ketelaar, 1991). The present study addresses this question by exploring differences in event evaluation (i.e., in assigning relatively positive or negative meaning to events). Building on previous literature, the focus of the study is on differences in evaluations relating to extraversion and neuroticism.

Theories of temperament have long sought to unravel the basic dimensions of personality. While the exact number and nature of the traits remains undetermined, a consensus has emerged on the existence of two basic traits, extraversion and neuroticism, known as the "Big Two" traits (Watson, Wiese, Vaidya, & Tellegen, 1999). Recent studies have underscored the reciprocal relations between them and two basic emotional dimensions – positive affect (PA) and negative affect (NA; Abe & Izard, 1999; Carver, Sutton, & Scheier, 2000; Chang, 1997; Costa & McCrea, 1980; Larsen & Ketelaar, 1989; Lucas & Baird, 2004; Rusting, 1998; Rusting & Larsen, 1997; Tellegen, 1985; Watson & Clark, 1992; Watson et al., 1999; Wilson & Gullone, 1999). Extraversion was related to a general tendency to experience PA, as well as to a tendency to react with stronger PA once a positive event has occurred. Neuroticism, on the other hand, was related to a general tendency to experience NA, as well as to a tendency to react with stronger NA once a negative event has occurred. For example, a study by Gross, Sutton, and Ketelaar (1998) presented multiple measurements of affect during an experiment that included positive and negative mood inductions (using film clips). The results showed consistent extraversion-PA and neuroticism-NA relations in the initial, pre- and postinduction measures, supporting the tonic (stable) personality–affect relations. In addition, evidence was found for reactivity effects; extraversion was associated with a strong PA reaction following an amusing clip and neuroticism with a strong NA reaction following unpleasant clips.

The evidence in support of extraversion-PA and neuroticism-NA associations seems robust, yet a reservation made by Larsen and Ketelaar (1991) still holds and leaves this literature with some unanswered questions. As Larsen and Ketelaar (1991) argued, in demonstrating personality-affect association, as in the above-mentioned studies, a distinction is not made between stimulus sensitivity and response magnitude. The strong positive reaction of extraverts (vs. introverts) to events could be the results of their uniquely positive interpretation of reality, or of their unique way of expressing their feelings to an equally perceived event. Both paths result in higher levels of PA among extraverts, yet each stems from a different process in the chain of reaction. The same question applies to neurotic individuals (vs. emotionally stable individuals) with regard to NA.

The question of differences in event perception has challenged scholars in a related line of research, which focuses on the contribution of personality to subjective well-being (Headey & Wearing, 1989; Magnus, Diener, Fujita, & Pavot, 1993). This literature shows that over long periods of time, extraverts report on experiencing more positive events and neurotics on experiencing more negative events. However, the reliance on self-reports in many of the studies leaves open the question of the framing of events, and the possibility that a given event is memorized as relatively po-

sitive or negative not only because of its objective qualities, but also because of differences in emphasis and in event evaluation that potentially characterize extraverts and neurotics.

One approach to emotion that heavily considers evaluation is appraisal theory (Lazarus, 1982, 1991; Lazarus & Folkman, 1984; Scherer, Schorr, & Johanstone, 2001). The basic premise of the theory is that evaluations (or appraisals) of situations precede and elicit emotions. Appraisals are assumed to be the link between the features of the external world and one's internal motives and resources. As such, appraisals oversee that the appropriate response to the situation is emitted. Variations in emotions result from changes in the circumstances, in the individual's internal needs, or in the individual's perceived resources. One derivative is that stable individual differences in appraisal could underlie changes in emotional responses (Roseman & Smith, 2001).

Lazarus and Smith (1988) stressed the difference between appraisal and knowledge, or "cold cognition". The former, which refers to evaluation of events *in relation to one's interests*, is the direct source of emotions. In contrast, cognitions, which comprise of knowledge and analytically fashioned judgments, do not include reference to one's interests and are insufficient to directly elicit emotions. That is, in the process of elicitation of an emotional response, objective judgments of external situations constitute a distal variable. These judgments are supplemented by one's assessments of his/hers personal interests and available resources, to result in an emotional response (Lazarus & Smith, 1988). As such, these "cold cognitions" seem to represent most adequately the perception phase that potentially underlies emotional reactivity. Said differently, to the extent that individual differences in event evaluation exist, their most distal (and therefore basic) expression would be in the objective and analytic judgment of events.

To explore the question of individual differences in event evaluation, we asked participants to judge 30 everyday events. The participants were asked to assign each event with an objective evaluation. The events were phrased as general occurrences, with no personal reference, so as to maximize the analytic rather than emotional approach to the evaluation. The events were preselected to represent positive, neutral, and negative occurrences from diverse life domains. Each event was judged for its positivity and negativity using two independent scales. Separating the positivity and negativity scales allows the expression of the full complexity of event evaluation, because many events have both positive and negative aspects that are lost when using a single scale. In addition, the two separate scales allow a closer inspection of the emphasis placed by different individuals when judging events, be it the positive or the negative aspect of each event.

We hypothesized that extraversion would correlate with the positivity evaluation (positive scale) of events, but not with the negativity evaluation (negative scale). In contrast, neuroticism was expected to correlate with the negativity evaluation but not with the positivity evaluation. The correlations of personality with event evaluation were expected to hold even after controlling for the contribution of momentary affective states to the prediction.

2. Method

2.1. Participants and procedure

The participants were 226 students from the Hebrew University, 63% females, with the average age being 23 (range: 18–32). The participants completed the questionnaires during class sessions in return

for a course credit. All participants first completed the PANAS referring to their momentary affect, and then, in a random order, personality questionnaire (EPQ-R) and the events questionnaire.

2.2. Materials

2.2.1. Personality

A Likert-type format of the EPQ-R short scale (Eysenck, Eysenck, & Barrett, 1985) was used to measure extraversion ($\alpha = .87$) and neuroticism ($\alpha = .86$). The participants were asked to circle a number between 1 and 4 in accordance with their level of agreement with each sentence (1 = "strongly disagree"; 2 = "disagree"; 3 = "agree"; 4 = "strongly agree"). The Likert-type format was preferred over the dichotomous format because of its improved psychometric properties (Muniz, Garcia-Cueto, & Lozano, 2005).

2.2.2. Affect

The PANAS (Watson, Clark, & Tellegen, 1988) was used to assess *momentary* ratings of positive affect ($\alpha = .82$) and negative affect ($\alpha = .90$).

2.2.3. Events questionnaire

The events questionnaire consisted of 30 descriptions of everyday positive, neutral, and negative events representing various life domains (i.e., academic, financial, occupational, social). Each participant completed one of three versions of the questionnaire, differing only in the order of presentation of the events. All events were phrased as general occurrences with no reference to the participant's personal experiences. That is, the participants were asked to evaluate the *events*, not to estimate their personal emotional reaction to them (cf. Lucas & Diener, 2001), a procedure that seeks to maximize their analytic approach to the task. The participants were asked to evaluate each event on two separate scales: *Positivity* and *negativity*, each ranging from 0 ("not at all") to 7 ("extremely"). Scores on both scales had a normal distribution and both scales showed acceptable reliabilities ($\alpha = .69$ for the positivity scale and $\alpha = .63$ for the negativity scale). Table 2 presents the means and standard deviations of the scales. In addition to these two scales, an *overall evaluation* score was calculated to reflect each event's *positivity* minus *negativity* difference.

3. Results

Table 1 presents descriptive statistics and intercorrelations among the predicting variables.

The pattern of correlations presented in Table 1 accords with the elaborate literature on personality-affect associations in showing a significant correlation of extraversion with PA but not with NA, and, in contrast, a significant correlation of neuroticism with NA but not with PA. Positive affect and NA were not significantly correlated, however extraversion and neuroticism were somewhat negatively correlated.[1]

[1] Partialing out the shared variance between extraversion and neuroticism has a minor effect on the results. The partial correlations between extraversion and affect after removing the shared variance with neuroticism are: extraversion-PA ($r = .27$, $p < .01$), extraversion-NA ($r = .03$, ns). The partial correlations between neuroticism and affect after removing the shared variance with extraversion are: neuroticism-PA ($r = -.03$, ns), neuroticism-NA ($r = .47$, $p < .01$).

Table 1
Descriptive statistics and intercorrelations among the predicting variables

	Extraversion	Neuroticism	Positive affect	Negative affect
M	2.88	2.30	2.64	1.83
SD	0.56	0.61	0.68	0.75
Extraversion	–			
Neuroticism	−.32**	–		
Positive affect	.30**	−.13	–	
Negative affect	−.13	.49**	.09	–

Note. $N = 226$.
** $p < .01$.

Table 2 presents a list of the events along with their positivity and negativity scores, sorted by overall evaluations. Positivity scores ranged from 0.72 (“failing an important test”) to 6.13 (“graduating with honors”), averaging at 3.54 (SD = 1.49), and negativity scores ranged from 0.56 (“winning 50 Shekels”) to 5.27 (“having a quarrel with a good friend”), averaging at 2.77 (SD = 1.51). Overall evaluation, which is the difference between positivity and negativity scores, averaged at 0.77 (SD = 0.62), thus representing a generally balanced scale, with a small bias toward positive judgments. As might be expected from ratings made by university students, across all events, those related to academic achievement were evaluated as the most positive (“graduating with honors”) and the most negative (“failing an important test”) events. Interestingly, winning a smaller sum of money (50 Shekels) had a more positive overall evaluation than winning a larger sum (1000 Shekels). The difference stems from the negativity rating, with the average participant finding more negative aspects in winning a larger sum than in winning a smaller sum.

To acquire an overarching view of the contribution of personality to the evaluation of the events, a hierarchical multiple regression analysis was conducted, in which the overall evaluation of events was regressed, in the first step, on affect (PA and NA), and in the second step on personality (extraversion and neuroticism). The results are presented in Table 3.

As seen in Table 3, personality had a substantial contribution to the overall evaluation of events on top of the effect attributed to momentary affect ($\Delta R^2 = .09$, $p < .01$). Furthermore, each dimension – extraversion and neuroticism – had an independent contribution to the prediction, with extraversion being associated with a positive overall evaluation and neuroticism with a negative overall evaluation.

Next, the hypothesis that extraversion and neuroticism are associated with placing different emphasis (i.e., positive vs. negative) when evaluating events was explored. To that end, the correlation of personality and affect with positivity and negativity evaluations was calculated (Table 4). In accordance with the hypothesis, extraversion was associated with positivity evaluation but not with negativity evaluation, whereas neuroticism showed the opposite pattern, correlating with negativity evaluation, but not with positivity evaluation. Momentary affect was also correlated with event evaluation, such that PA showed the same correlation pattern as extraversion and NA the same pattern as neuroticism.

To substantiate the unique contribution of personality to evaluation beyond that of momentary affect, two multiple regression analyses were conducted. In the first analysis positivity evaluation was regressed on extraversion and PA. As seen in Table 5, each predictor had a unique

Table 2
The positivity and negativity scores of the events

Event	Positivity	Negativity
1. Graduating with honors	6.13	0.60
2. Getting positive feedback for performing a task	5.65	0.76
3. Watching a comedy	5.60	0.82
4. Winning 50 Shekels (~$10, L.U.)	5.15	0.56
5. Receiving a surprising gift	5.43	1.28
6. Fulfilling an significant personal dream	5.57	1.48
7. Winning 1000 Shekels (~$200, L.U.)	5.08	1.08
8. Getting a high grade in an assignment	5.14	1.48
9. Moving to a new home	4.08	2.19
10. Attending an interesting talk	4.04	2.18
11. Getting promoted	4.50	2.65
12. Going out with friends	4.08	2.28
13. Investing in stocks	3.96	2.22
14. Being called to a meeting with the manager	4.15	2.44
15. Marriage of a relative	4.03	2.47
16. Taking place of an event that was foreseen	4.05	2.50
17. Bidding farewell to school mates	3.03	2.98
18. Getting a grade in an important exam	3.30	3.33
19. Receiving a letter from an unknown person	2.72	2.92
20. Embarrassing slip of the tongue	2.85	3.22
21. Getting negative feedback for performing a task	2.82	3.75
22. Getting laid off	2.70	3.91
23. Causing a light car accident	2.46	3.77
24. Loosing 50 Shekels (~$10, L.U.)	1.90	3.47
25. Having a blind date	2.32	3.92
26. Get reprimanded by the manager	1.70	4.71
27. Loosing 1000 Shekels (~$200, L.U.)	1.46	4.83
28. Getting a low grade in an assignment	1.10	4.95
29. Having a quarrel with a good friend	1.14	5.27
30. Failing an important test	0.72	5.10
M	3.54	2.77
SD	1.49	1.51

Note. $N = 226$; the events are sorted by the positivity of the overall evaluation.

contribution to the level of positive evaluation of the events, meaning that even after controlling for PA, extraversion was associated with finding more positive aspects in everyday events. In the second analysis, negativity evaluation was regressed on neuroticism and NA. As seen in Table 6, the contribution of neuroticism to finding negative aspects in everyday events remained significant even after NA was controlled for.

In sum, each personality dimension had a unique contribution in forming evaluation of events. The unique contribution was due to each dimension being associated with an emphasis on a different aspect of the events; extraversion was associated with an emphasis on the positive aspects, whereas neuroticism with an emphasis on the negative aspects.

Table 3
Hierarchical multiple regression analysis predicting overall evaluation of the events

	B	SE_B	β
Step 1			
Positive affect	.22	.06	.24**
Negative affect	−.09	.05	−.11
Step 2			
Positive affect	.13	.06	.14*
Negative affect	.01	.06	.01
Extraversion	.26	.07	.24**
Neuroticism	−.18	.08	−.18*

Note. $N = 226$; $R^2 = .07$, $p < .01$ for step 1; $\Delta R^2 = .09$, $p < .01$ for step 2.
* $p < .05$.
** $p < .01$.

Table 4
Correlations of positivity evaluation and negativity evaluation with personality and affect

	Positivity evaluation	Negativity evaluation
Extraversion	.28**	−.11
Neuroticism	−.07	.24**
Positive affect	.31**	.03
Negative affect	.08	.18*

Note. $N = 226$.
* $p < .05$.
** $p < .01$.

Table 5
Regression analysis predicting positive evaluation

	B	SE_B	β
Positive affect	.19	.05	.25**
Extraversion	.18	.06	.20**

Note. $N = 226$; $R^2 = .13$, $p < .01$.
** $p < .01$.

4. Discussion

Much research has shown that in response to external events extraversion is related to PA and neuroticism to NA. However, little is known about the processes leading to these reactions (Larsen & Ketelaar, 1991; Magnus et al., 1993). The present study addressed this question by suggesting that an important component in bringing about differences in reaction resides with the initial judgment of the event. To explore initial judgments of events this study focused on participants' "cold cognitions" – their analytic assessment of external events – which represent the most distal

Table 6
Regression analysis predicting negative evaluation

	B	SE_B	β
Negative affect	.06	.06	.08
Neuroticism	.18	.07	.20**

Note. $N = 226$; $R^2 = .06$, $p < .01$.
** $p < .01$.

conscious source of emotional reaction. The participants were not asked to assess their reactions to the events as if they were experiencing them, but rather to judge the *events* and to evaluate their positive and negative characteristics (cf. Lucas & Diener, 2001). To further control for the effect of emotional states, momentary PA and NA were measured and controlled for.

The results supported the idea that extraversion and neuroticism represent predispositions to interpret events through either rosy or grayish glasses. Extraversion was associated with a general positive evaluation of events, whereas neuroticism with a general negative evaluation of the same events. At first glance they appeared to represent two opposing worldviews, however, breaking the overall evaluation into its positivity and negativity components revealed a relationship of complementarity. Extraversion was found to be associated with variations in the positivity evaluation (but not in the negativity evaluation), and neuroticism with variation in the negativity evaluation (but not in the positivity evaluation), the one not excluding the other.

With life presenting numerous multifaceted events, extraversion seems to be responsible for noticing their positive aspects and neuroticism their negative aspects. In establishing that, the present study adds to the literature on personality–affect relations a systematic basis that places the difference in affective reactions in an early process of meaning assignment. The results also imply that to some extent the effects of personality on subjective well-being rests with the meaning assigned to life experiences and not only with the objective nature of the events. This adds another layer of subjectivity to the already idiosyncratic sense of well-being, one that potentially paves new avenues to enhancing it.

An intriguing question that remains is what are the processes responsible for the differences in event perception and what is their source. Are they the result of genetic heritage, or do they develop in the process of growing-up, during which positive and negative experiences are accumulated and create a set of conditioned expectations that eventually leads to a particular way of experiencing the world? Another unsolved question refers to the balance between the way an event is perceived and the subsequent emotional reaction. Is emotional reaction the result of either positivity or negativity evaluation, or does the basis for the reaction reside with the overall evaluation of the event that takes into account both aspects? Only a systematic exploration that will look at the role of event perception as a mediator of affective reaction will bring us closer to answering this question. However, one must bear in mind that different processes could be working when an immediate reaction to an event takes place, and a relatively narrow point of view dominates, compared to affective reactions over long time frames when more elaborate considerations are noticed.

Before concluding, a note should be made on one of the limitations of the study. In forming the list of everyday events, an attempt was made to introduce a wide spectrum of events from different life domains in order to gain an overarching perspective of personality–evaluation relations. Still, the sample was based on university students and the events have relevance to their lives. In order

to further generalize and substantiate the conclusions it is required to conduct additional studies that will include other populations and additional sets of events.

To conclude, the present study shows that extraversion and neuroticism predispose individuals to notice either the positive (extraversion) or the negative (neuroticism) attributes of events, supporting the suggestion that event perception may stand at the basis of emotional reactivity.

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