

The Place of Anxiety and Impulsivity in a Dimensional Framework

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The papers in this symposium are concerned with anxiety and impulsivity. Some refer these concepts to a structural theory of personality, although perhaps more to Gray's (1972, 1981) modification of my own theory than to the theory itself. I believe that the questions that arise in this connection are fundamental to our view of anxiety and impulsivity, and consequently concentrate on this problem, rather than going in detail into the particular studies reported by the participants of this symposium.

As H. J. Eysenck and M. W. Eysenck (1985) make clear, anxiety and impulsivity are regarded as traits, and from one point of view one may regard the major dimensions of personality (psychoticism, extraversion, and neuroticism) as being the product of the observed intercorrelations between traits. It is possible, however, to reverse this process and regard traits as being largely (but not entirely) clusters of dots (each representing a single question in a personality inventory relating to anxiety or impulsivity, respectively) located at some point in the three-dimensional frame generated by P, E, and N. Thus "impulsivity" would be a trait characterized by a cluster of dots lying in the P+, E+, N+ octant. Such a cluster of dots, each representing a single question in the impulsivity inventory, would not be readily discriminable from neighboring clusters, such as that relating to sensation seeking, for instance. Nor would such a cluster be incapable of subdivision; several factor analytic studies have shown that impulsivity can itself be shown to be far from a unitary trait, but rather to be made up of several distinct subtraits like risk taking, planning, lack of control etc. (S. B. G. Eysenck & H. J. Eysenck, 1977). These subclusters are only correlated to the extent of about .3; in other words, they only have in common about 10% of the variance. It is questionable whether this is sufficient to lead to the acceptance of the idea of a unitary factor, and it is as such that the term *impulsivity* is treated by most of the authors in this symposium.

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Much the same could be said about sensation seeking. As Zuckerman (1979) makes clear, sensation seeking includes four separate factors, entitled Thrill and Adventure Seeking, Experience Seeking, Disinhibition, and Boredom Susceptibility; again, these intercorrelate only to the extent of about .3 on the average, thus leading to the question of whether we are in fact dealing with a unitary factor of any kind.

Looking at any trait, we might say that it is in part simply a combination of P, E, and N, to a varying degree; in addition, there is perhaps a specific contribution lying outside the P E N space, but whether this is so or not would have to be determined by special investigations (H. J. Eysenck & M. W. Eysenck, 1985).

Looking at anxiety and impulsivity from this point of view, then, would lead us to suggest that the stands taken by most of the authors in this symposium are of doubtful validity. Perhaps it would have been more advantageous had they analyzed the data in terms of the fundamental dimensions of personality, rather than the relatively arbitrary combination of these which identify the construct of "impulsivity" or "anxiety." The array of item points in the three-dimensional space is essentially continuous, and the formation of clusters relatively arbitrary. Certainly impulsivity and sensation seeking are contiguous, and it is by no means clear that the correlation between them is any lower than that between the subfactors (subclusters) which identify "impulsivity" or "sensation seeking." What I am trying to suggest is that the identification of so-called primary traits is a relatively arbitrary matter, whereas the major dimensions of personality emerge with great regularity from the vast majority of analyses that have been undertaken in many different countries, using many different inventories, and many different methods of analysis (H. J. Eysenck & M. W. Eysenck, 1985).

A way to cut the Gordian knot, of course, would be to accept Gray's theory which rotates the Eysenck factors of E and N by 45°, thus creating two new factors which he calls anxiety and impulsivity. Gray claims that his theory is in better agreement with research on animal learning and physiology, which has led to the discovery of two major systems. One of these is responsive to signals of punishment or frustrative nonreward, whereas the other system responds to signals of reward or nondelivery of anticipated punishment. According to Gray, individual differences in susceptibility to punishment lie along the anxiety dimension, and at a physiological level the behavioral inhibition system is involved. It comprises the septo-hippocampal system, its monoaminergic afferents from the brain stem, and its neocortical projection in the frontal lobe. In contrast, individual differences in susceptibility to reward are determined by the impulsivity dimension and relate physiologically to the approach system, which involves the medial forebrain bundle and the lateral hypothalamus.

While from some points of view ideally suited to the purposes of this symposium, this modification of Eysenck's theory is essentially unacceptable. In the first place, practically all the large-scale factor analytic studies in the literature have found factors corresponding to E and N (which are the two factors rotated by Gray), but none have found two major factors corresponding to anxiety and impulsivity when large enough samples of traits and items were used. This is a powerful argument which is neglected by Gray. Why is it that again and again E and N emerge as the major factors, and never anxiety and impulsivity?

The second criticism is that all measures of anxiety that have been correlated with E and N fail to locate at an angle of 45° from both these primary dimensions of personality; usually anxiety, however measured, is close to neuroticism (perhaps at an angle of 10 to 15°), with a slight mixture of introversion. Even that is only true as long as we adopt a "mental" definition of anxiety, i.e., in terms of verbalizations of worries, fears, and depressive thoughts; when we use more bodily symptoms of anxiety then there is a slight correlation with extraversion. The position given to anxiety by Gray in the E-N system is far removed from that occupied by direct measures of anxiety when introduced into this system (H. J. Eysenck, 1973).

The same must be said of impulsivity, which in Gray's system lies within the E+ /N+ quadrant. Direct measures of the trait of impulsivity do correlate with N and E, but they correlate much more powerfully with P; in other words, impulsivity would be wrenched out of the plane of the diagram into a third dimension altogether. In any case, as we have already pointed out, "impulsivity" is not a unitary trait in any sense, and different dots in this cluster of dots correlate differentially with P, E, and N.

We may grant that Gray's hypothesis relating his two systems to personality is an important contribution to personality theory, but the evidence seems to suggest that the responsivity to signals of punishment or frustrative nonreward is related to introversion, the responsiveness to signals of reward or nondelivery of anticipated punishment to extraversion, with neuroticism serving to emphasize and make stronger these reactions. Gray's theory in this respect does not necessitate any rotation of axes, certainly not the one suggested in his latest version (Gray, 1981). A detailed discussion of the weaknesses of his system is given by H. J. Eysenck and M. W. Eysenck (1985), and while acknowledging the importance of his contribution in relating extraversion-introversion to his two systems, the conclusion must be that the rotation of axis is not in line with the evidence so far produced.

It has always been a tendency for American psychologists to think and write in terms of primary factors or traits, both in the field of

intelligence (ability) and in the field of personality (temperament). English psychologists, on the other hand, have tended to follow the lead of Spearman and concentrate on general factors, both in the field of intelligence (*g*) and in the field of personality (P, E, and N). It is curious that these national tendencies have never led to an articulate discussion, at least as far as the personality field is concerned. I believe that concentration on anxiety and impulsivity, as shown in this symposium, is essentially counterproductive and hence makes a bad protagonist for the kind of analysis undertaken by the participants of this symposium. It is undoubtedly possible that for certain specific purposes it is more profitable to use specific trait questionnaires rather than rely on measures of the major dimensions of personality. However, where theoretical issues are concerned, as in most of the papers in this symposium, it must be said that theories in the field of P, E, and N are much more highly developed than those which deal with primary traits, so that as a contribution to theory an insistence on anxiety and impulsivity as independent variables is probably not a wise choice.

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