

Personality: Possible Effects of Inbreeding Depression on Sensation Seeking

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Abstract

Penke et al. (this issue) state that there are no studies of inbreeding depression on personality. In this response to their paper, we look at the effect of parents being born in the same geographical region on personality in themselves and in their offspring. Results show that when parents come from the same region, both they and their offspring score lower on sensation seeking than when parents come from different regions. These results may suggest effects of inbreeding depression on personality. Copyright © 2007 John Wiley & Sons, Ltd.

Studies of inbreeding depression on intelligence (Jensen, 1998) show evidence for inbreeding depression, but—as stated by Penke et al. (this issue)—there are no studies of inbreeding depression on personality. However, Camperio Ciani, Capiluppi, Veronese, and Sartori (2007) reported an interesting comparison of personality traits in Italian coast dwellers and Italians from three small island groups. Subjects whose families had lived on the islands for at least 20 generations were lower in extraversion and openness to experience. Penke et al. discuss this finding in the context of ‘environmental niches’ for personality traits, but an alternative explanation might also be possible: the islanders might form a genetically more related group (a genetic isolate) whose offspring shows an effect of inbreeding depression.

To test this hypothesis in an alternative dataset, we took personality data collected in Dutch families consisting of parents and their twin offspring. The families took part in longitudinal survey studies. In 1991 and in 1993 the parents were asked if they had been born in the same geographical region (answers ‘yes’, ‘no’ and ‘don’t know’). We formed two groups of families: those whose parents were born in the same geographical region and those whose parents were born in different regions. Please note that same or different region can be a rural or non-rural part of The Netherlands, the question was only about proximity. We then examined if there were personality differences between the two groups. Personality scores were compared between the two groups in the parental and in the offspring generation. We looked at personality traits related to neuroticism, extraversion and sensation seeking. We hypothesise that if parents were born in the same geographical region, they may genetically be more related than when they come from different areas of the country, and use this test as an indirect way of looking at inbreeding depression (or its opposite ‘hybrid vigour’).

Participants. This study is part of an ongoing study on personality, health and lifestyle in twin families registered with the Netherlands Twin Register (NTR; Boomsma et al., 2006). Surveys were mailed to twin families every 2 to 3 years. For the present study data from the 1991 and 1993 surveys were used. In total, there were 2905 families. There were 1940

families who took part once (in 1991 or 1993) and 965 who took part at both occasions. Average age of the parents was 46.67 years in 1991 and 47.04 in 1993; average age of their offspring was 17.73 years in 1991 and 20.18 in 1993.

Measures. In both surveys parents of the twins were asked if they had been born in the same region. Data from the two surveys were combined into one yes/no measure. The following 10 personality measures were analysed: neuroticism, extraversion and somatic Anxiety and Test Attitude (ABV; Wilde, 1970); thrill and adventure seeking, boredom susceptibility, disinhibition and experience seeking (Feij & van Zuilen, 1984; Zuckerman, 1971), trait anger and anxiety were measured using the Dutch adaptation of Spielberger's State-trait Anger Scale (STAS; Spielberger, Jacobs, Russell, & Crane, 1983; van der Ploeg, Defares, & Spielberger, 1982) and State-trait Anxiety Inventory (STAI, Spielberger, Gorsuch, & Lushene, 1970). Personality measures were averaged over occasions if subjects participated more than once.

Data analyses. We first looked at personality differences between parents being born in the same geographical region and parents being born in different geographical regions, separately for fathers and mothers. In the offspring generation, the same comparisons were carried out separately for first and second born twins to avoid dependency of observations. Data analyses were carried out with SPSS. We employed MANOVA to study group differences. The use of MANOVA prevents the inflation of overall type I error that derives from the use of multiple univariate tests on a group of correlated variables. In the offspring generation sex was introduced as a covariate.

Results. For fathers there was a significant effect of same region on two Sensation Seeking Scales, i.e. boredom susceptibility and experience seeking. In addition an effect was seen for test attitude. For mothers, experience seeking and test attitude were also significantly different between groups. In mothers, a significant effect was also observed for thrill and adventure seeking, which also is one of the Sensation Seeking Scales, and somatic anxiety (see Table 1). Subjects who were born in the same region as their spouse score higher in test attitude, which assesses the tendency to give socially desirable replies. Subjects who were born in the same region as their spouse score lower on Sensation Seeking Scales. Mothers who were born in the same region as their partner show lower somatic anxiety. The largest effect size was for experience seeking.

Table 1. Mean values for personality variables that show significant differences in parents of twins

	Father's mean			Mother's mean		
	Same region <i>N</i> = 1433	Different region <i>N</i> = 855	Effect size	Same region <i>N</i> = 1557	Different region <i>N</i> = 950	Effect size
Boredom susceptibility	36.44	37.25**	.113	35.43	35.68	
Experience seeking	31.61	33.76**	.289	29.47	31.62**	.282
Thrill and adventure seeking	28.69	29.50		21.75	22.66**	.118
Test attitude	39.45	38.72*	.086	41.28	40.05**	.143
Somatic anxiety	16.47	16.20		18.16	18.67*	.091

Note: *p* values next to the means correspondent to the *F* statistic of the between subjects effects of 'same region'.
p* < .05; *p* < .01.

Table 2. Mean values for personality variables that show significant differences in both twins

	Twin 1 mean			Twin 2 mean		
	Same region <i>N</i> = 1581	Different region <i>N</i> = 955	Effect size	Same region <i>N</i> = 1574	Different region <i>N</i> = 954	Effect size
Boredom susceptibility	38.01	38.56*	.082	37.86	38.77**	.137
Experience seeking	33.95	35.48**	.220	34.12	35.33**	.180
Thrill and adventure seeking	39.09	40.09**	.110	38.83	39.59*	.094
Somatic anxiety	18.66	19.20**	.119	18.66	19.15*	.089

Note: *p* values next to the means correspondent to the *F* statistic of the between subjects effects of 'same region' independent of the effect of sex.

p* < .05; *p* < .01.

In the offspring generation there was no effect on test attitude. However, experience seeking, boredom susceptibility, thrill and adventure seeking and somatic anxiety also reached significance in first and second born twins. The direction of the differences was the same as in the parental generation (see Table 2). Experience seeking again shows the largest effect size, and it is the trait that shows significant differences in both parents and both twins.

The reappearance of personality differences between parents who were born in the same region and parents who were born in different regions in the offspring generation suggests the presence of inbreeding depression in personality. This is especially true for sensation seeking traits. These results agree with those of Camperio Ciani et al. (2007) who found that subjects whose families had lived on islands for at least 20 generations were lower in openness to experience. Alternative explanations are also possible, e.g. sensation seekers tend to move around more, and their children inherit their sensation seeking tendencies.

ACKNOWLEDGEMENTS

This study was supported by: Spinozapremie (NWO/SPI 56-464-14192); twin-family database for behaviour genetics and genomics studies (NWO 480-04-004); NWO Depression anxiety, J.R. Harris.