



Season of birth variation in sensation seeking in an adult population

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Abstract

Previous research has identified a relationship between season of birth and level of novelty seeking (Chotai, Lundberg, & Adolfsson, 2003). The current study investigates whether level of sensation seeking is also related to birth season in individuals from the Northern Hemisphere. Participants were 448 students of The Open University, UK (125 males, 323 females, age range 20–69 years, mean = 39.2, SD = 9.8). The Sensation Seeking Scale V and a demographic questionnaire including month of birth were completed by participants either on the World-Wide Web ($n = 284$) or on paper ($n = 164$). A significant interaction of age and season of birth on level of sensation seeking was found, similar to previous findings for novelty seeking. Individuals aged 20–45 years born during October to March had a higher level of sensation seeking than those of the same age born in the other six months, while the opposite association was found for individuals aged 46–69 years. Results suggest an age-related difference in level of sensation seeking between individuals born during different seasons. Possible reasons for the seasonal difference are discussed, including development of the sensation seeking trait across the lifespan in relation to dopamine turnover.

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1. Introduction

The association between season of birth and a number of physical and psychiatric conditions among individuals in non-equatorial regions has been firmly established. For instance, adult life expectancy (Doblhammer & Vaupel, 2001), body size (Phillips & Young, 2000), handedness (Martin & Jones, 1999), and rate of dyslexia (Livingston, Adam, & Bracha, 1993) have all been shown to relate to the season in which an individual is born. There is also evidence for an association of birth season with the rate of some psychiatric conditions including schizophrenia (Torrey, Miller, Rawlings, & Yolken, 1997), affective disorder (Castrogiovanni, Iapichino, Pacchierotti, & Pieraccini, 1998; Clarke et al., 1998), panic disorder (Iapichino, Pieraccini, Di Muro, Del Sole, & Castrogiovanni, 1997), autism (Bolton, Pickles, Harrington, Macdonald, & Rutter, 1992), and depressive or suicidal symptoms (Chotai & Salander Renberg, 2002; Joiner, Pfaff, Acres, & Johnson, 2002).

The majority of research into birth seasonality in psychiatric conditions has focussed on schizophrenia, showing that individuals in the Northern Hemisphere who later develop schizophrenia are more often born in the winter–spring months of January to April, and in the Southern Hemisphere from July to September (Torrey et al., 1997). A number of factors have been suggested to be involved in the season of birth association, including seasonal variations in photoperiod and internal chemistry, external toxins, nutrition, temperature and weather effects, and maternal infection (Tochigi, Okazaki, Kato, & Sasaki, 2004; Torrey et al., 1997). Researchers have also speculated on the time period during which seasonally varying factors may have an influence on development of schizophrenia, be it at conception, gestation, or during the early part of postnatal life (Tochigi et al., 2004).

The season of birth effect on rates of psychiatric disorders in abnormal populations has led researchers to investigate whether season of birth is also associated with personality and behaviour in non-clinical populations. Recent findings have demonstrated an association between season of birth and scores on the temperament scale of novelty seeking (Chotai, Forsgren, Nilsson, & Adolfsson, 2001; Chotai, Johansson, Hagglof, & Adolfsson, 2002; Chotai et al., 2003). Novelty seeking is defined as a tendency towards exploratory activity and intense excitement in response to novelty, impulsive decision making, and active avoidance of monotony or frustration (Cloninger, 1987). Level of novelty seeking was found to be significantly lower among adults aged 35–85 years born during the period containing winter in comparison to those born during the rest of the year, particularly among women (Chotai et al., 2001). An opposite season of birth association for novelty seeking was found among adolescents (Chotai et al., 2002) and young adults (Chotai et al., 2003), with novelty seeking significantly higher among those born during the period containing winter compared to those born during the rest of the year. These findings suggest that the dynamics of personality development differ among adolescents and young adults compared to older adults (Chotai et al., 2002; Chotai et al., 2003; Luby, Svrakic, McCallum, Przybeck, & Cloninger, 1999).

The mechanism underlying the relationship between birth season and level of novelty seeking is so far unknown, but season of birth variations in monoamine neurotransmitter levels, especially dopamine, is one possible causal factor (Chotai et al., 2003). Specifically, previous research has suggested a difference in the turnover of the dopamine–melatonin systems in people born in the half years containing winter (October to March) compared to those born in summer (April to Sep-

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