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Visual Perspective and Genetics: A Commentary on Lemogne and Colleagues

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Abstract

Lemogne and colleagues offer an interesting extension to their previous work on visual perspective and depression: Individuals at-risk for depression (defined as higher scores on Harm Avoidance), without a history of mood disorders, report retrieval of positive memories from the 3rd person perspective. Their findings suggest that the retrieval of positive experiences from the 3rd person perspective may be a risk-factor for depression, not just a lingering consequence of it. Their study, however, also reports a genetic association in a severely underpowered sample. Rather than focusing on gene \times environment interactions, which large, well-powered studies on related phenotypes have failed to detect, a greater understanding of the phenomenology of visual perspective may be a more fruitful avenue for future research.

Keywords

Visual perspective; genetics; Neuroticism; Depression; Autobiographical Memory; 5-HTT

A complete understanding of any psychological phenomenon, including visual perspective, will necessarily include its biological underpinnings, ultimately starting from the individual's genes. Given the progress that has been made in genetics over the last decade, there are now great opportunities to integrate psychological and biological methodologies. Lemogne and colleagues (this issue) take such an integrative approach to visual perspective by examining its relation to biological (5-HTTLPR), as well as psychological (Harm Avoidance), vulnerabilities to depression.

Although tantalizing, the relation between genetics and complex behavioral traits remains tenuous, and it may be premature to build complex models before the foundations are solid. For example, considerable effort has been devoted to linking variants in the serotonin transporter gene to depression and anxiety-related traits. In particular, much of this research has focused on trait Neuroticism, a strong risk factor for depression across the lifespan (Bienvenu et al., 2004; Kendler, Gatz, Gardner, & Pedersen, 2006; Weiss et al., in press). Although initial reports on small samples (< 600 participants) were promising (e.g., Lesch et al., 1996), several large, well-powered studies (~4000 participants) have provided strong evidence against an association between 5-HTTLPR and Neuroticism (Munafò, Freimer et al., 2009; Terracciano et al., 2009; Willis-Owen et al., 2005). In addition, two consistent findings

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have emerged from recent genome-wide association scans: There is no evidence of an association between 5-HTT and either Neuroticism (Shifman et al., 2008; Terracciano et al., 2008; Van Den Oord et al., 2008) or depression (Muglia et al., 2008) and, more generally, genetic variants explain much less than 1% of the variance in quantitative traits. Instead, quantitative traits may be influenced by many loci, each explaining a fraction of a percent of the variance.

The association between 5-HTTLRP and depression-related traits, however, may be moderated by exposure to stressful life events (Caspi et al., 2003). Yet, as with the main effect of genes on behavioral traits, interactions are similarly elusive. Several large-scale studies have failed to find a significant gene \times environment interaction (e.g., Surtees et al., 2006) and a recent meta-analysis concluded that significant interactions between 5-HTTLPR and stressful life events on depression are compatible with chance findings (Munafò, Durrant, Lewis, & Flint, 2009). Further, to detect a gene \times environment interaction, some have argued (e.g., Cooper, 2003) that sample sizes need to be approximately four times larger than those needed to detect a main effect of the same magnitude. Small-sample studies will simply not have the power to estimate such effects reliably.

In addition, there are basic questions about the nature of visual perspective, relevant to the genetic study of perspective, which remain unanswered. For example, to what extent is visual perspective trait-like versus state-like? Is it a general retrieval style or is it memory specific? Is it stable over time? The answer to these questions become increasingly important when considering the genetic basis of visual perspective, as the more heterogeneous the phenotype the more difficult it is to detect a genetic effect.

There is still much to be learned about the relation between visual perspective and depression behaviorally, and Lemogne and colleagues (this issue) add an interesting piece to this literature: they report that individuals at-risk for depression (defined as higher scores on Harm Avoidance), but who do not yet have a history of mood disorders, already report retrieval of positive memories from the 3rd person perspective. This finding builds on their previous research which has shown that individuals who are either currently depressed (Lemogne et al., 2006) or who are in remission (Bergouignan et al., 2008), retrieve positive memories from the 3rd person perspective. In light of these previous findings, their current data suggest that 3rd person memories for positive experiences are a risk-factor for depression, not just a lingering consequence of it. Investigators typically do not take history of mood disorders into account when examining the association between visual perspective and depression-related variables. Although longitudinal research is needed to determine the developmental interplay between visual perspective and depression, assessing visual perspective in individuals with a vulnerability to, but no history of, depression is the first step towards disentangling the causal direction of these two variables.

Their findings also support the hypothesis that visual perspective may be one mechanism through which individuals maintain self-coherence (Libby, Eibach, & Gilovich, 2005; Sutin & Robins, 2008). People are motivated to maintain both a coherent identity and high self-esteem (Swann, Rentfrow, & Guinn, 2003). When the two motives conflict, people generally choose authenticity over feeling good (Swann, Griffin, Predmore, & Gaines, 1987). For depression-prone individuals, memories of positive experiences may be incongruent with their negative self-concept. As an effective short-term strategy, the 3rd person perspective may reduce the inauthenticity produced by the positive memory by distancing the incongruent happy self in the memory from their dispositionally negative self. In the long run, however, this strategy greatly diminishes the power of positive memories to buffer against negative moods and may help to initiate a first depressive state, as well as perpetuate it.

Certainly, the field of genetics opens up a wide range of opportunities for research on psychological constructs and will help inform visual perspective as the research in this area progresses. Ultimately, a complete understanding of psychological phenomena will necessarily include their genetic origins and, when possible, genetic information should be incorporated into study designs. But care needs to be taken when approaching this research. Maintaining a narrow focus on specific genes that do not show reliable relations with the trait of interest will only hinder advancement. Large-scale, collaborative efforts that focus on multiple genes and multiple constructs may be a more fruitful avenue to elucidate the genetic underpinnings of psychological phenomena, such as visual perspective.

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