



A mixed blessing? Dual mediating mechanisms in the relationship between dopamine transporter gene DAT1 and leadership role occupancy

Wen-Dong Li^{a,1}, Nan Wang^b, Richard D. Arvey^c, Richie Soong^d, Seang Mei Saw^e, Zhaoli Song^{b,2}

^a Department of Psychological Sciences, Kansas State University, 492 Bluemont Hall, Manhattan, KS 66506-5302, USA

^b Department of Management & Organization, National University of Singapore, Mochtar Riady Building, BIZ1 Storey 8, 15 Kent Ridge Drive, Singapore 119245, Singapore

^c Department of Management & Organization, National University of Singapore, Mochtar Riady Building, BIZ2 Storey 1, 1 Research Link, 117592, Singapore

^d Department of Pathology, National University of Singapore, MD6 Level 11, 14 Medical Drive, Singapore 117599, Singapore

^e Saw Swee Hock School of Public Health, National University of Singapore, MD3 Level 3, 16 Medical Drive, Singapore 117597, Singapore

ARTICLE INFO

Article history:

Received 30 April 2014

Received in revised form 13 December 2014

Accepted 31 December 2014

Available online 23 January 2015

Handling Editor: Kevin Lowe

Keywords:

Leadership role occupancy

Dopamine gene

Proactive personality

Rule breaking

Dual mechanisms

ABSTRACT

Trait theories of leadership have documented the role of individual characteristics in affecting leadership. Twin studies have further revealed significant genetic effects on leadership role occupancy. In the era of genomics, the current research examines how a dopamine transporter gene, DAT1, is involved in genetic influences on leadership role occupancy. Study 1 found DAT1 10-repeat allele to negatively relate to proactive personality, which in turn was positively associated with leadership role occupancy. The negative indirect effect was significant, but the overall relationship between this gene and leadership was not. In addition to replicating Study 1's findings using a nationally representative sample, Study 2 revealed another countervailing mechanism: DAT1 was positively related to (moderate) rule breaking, which was positively associated with leadership role occupancy. Consistent findings across the two studies suggest that the pathways linking specific genes to leadership are complex and a middle-ground approach is needed in such multidisciplinary investigations.

© 2015 Elsevier Inc. All rights reserved.

Trait theories of leadership have long highlighted the indispensable role of individual characteristics in shaping leadership variables (Day & Zaccaro, 2007; DeRue, Nahrgang, Wellman, & Humphrey, 2011; House, 1988; Judge, Bono, Ilies, & Gerhardt, 2002; Lord, De Vader, & Alliger, 1986; Stogdill, 1948). This line of research perhaps dates back to Galton's (1869) work on the hereditary background of great men. Recently, behavioral genetics research has reported that a fundamental individual difference variable – people's genetic makeup – accounts for approximately 30% of the variance in *leadership role occupancy*, defined as the extent to which people occupy leadership positions (Arvey, Rotundo, Johnson, Zhang, & McGue, 2006; Arvey, Zhang, Avolio, & Krueger, 2007). Such investigations have illuminated the relative contributions of nature and nurture to leadership and have further advanced the scientific inquiry into the biological basis of leadership (Antonakis, Day, & Schyns, 2012; Becker, Cropanzano, & Sanfey, 2011; Ilies, Arvey, & Bouchard, 2006; Senior, Lee, & Butler, 2011; Shane, 2009; Waldman, Balthazard, & Peterson, 2011). Bass and Bass (2008) even assert, “the genetic factor needs to be taken into account in any complete examination of leadership” (p. 1203).

The appreciable genetic effects on leadership revealed in classical twin studies notwithstanding, in the new era of genomics (Green & Guyer, 2011; Lander, 1996; Watson, 1990) two important research questions arise. First, which specific *DNA markers* are involved in

E-mail addresses: oceanbluepsy@gmail.com (W.-D. Li), wangnan09@nus.edu.sg (N. Wang), bizra@nus.edu.sg (R.D. Arvey), richie_soong@nus.edu.sg (R. Soong), seang_mei_saw@nuhs.edu.sg (S.M. Saw), bizszl@nus.edu.sg (Z. Song).

¹ Tel.: +1 785 532 0685; fax: +1 785 532 5401.

² Tel.: +65 65165739; fax: +65 65 6775 5571.

such genetic influences? Second, and perhaps a more important question is, through what *mechanisms* are potential DNA markers related to ascendance into leadership positions? Few studies, to our knowledge, have examined which specific DNA markers are related to leadership. The only exception is a recent notable study finding that a genetic marker, rs4590, on a nicotine acetylcholine receptor gene (CHRNA3), was significantly correlated with leadership role occupancy (De Neve, Mikhaylov, Dawes, Christakis, & Fowler, 2013). However, that study did not “pinpoint a precise causal pathway that connects rs4590 SNP on the CHRNA3 gene to leadership role occupancy” (p. 55). The authors also urged future research to ascertain the role of “many other genotypes in shaping leadership emergence” (p. 56).

The aim of the present study is twofold. First, it seeks to identify specific genetic markers associated with human dopamine systems that may partially explain substantial genetic influences on leadership role occupancy. Second, it investigates distinctive pathways that may explicate possible indirect or direct relations between the dopamine gene and leadership. Toward this end, we first adopt a *candidate gene approach*, which is “based on known functions [of genetic markers]” (Robinson, Grozinger, & Whitfield, 2005, p. 258), to guide the search for specific DNA markers potentially related to leadership. Compared to a more data-driven approach relying heavily on massive DNA information without a priori hypotheses, such a relatively more theory-driven approach grounds our investigation in the leadership literature and accumulating evidence from recent molecular genetic research. Thus this approach fits with the tradition in organizational research stressing the importance of theoretical explanations. The candidate gene approach is considered as a valid method to examine the genetic foundation for phenomena in social sciences, especially when findings can be replicated in different samples as in the current research (Duncan & Keller, 2011; Fowler & Dawes, 2013). Second, in Study 2 we further adopt a middle-ground approach drawing on both relevant theories and empirical evidence observed in Study 1 in exploring the multiple mechanisms linking the dopamine gene to leadership role occupancy. Such a middle-ground approach to conducting relatively exploratory research is a suggested practice not only in organizational and psychological research (e.g., Bandura, 2005; Van de Ven, 2007), but also in pioneering molecular genetic research (e.g., Caspi et al., 2003; Ebstein et al., 1996). Taken together, as one of the first steps to address the above two research questions that cannot be appropriately addressed without a multidisciplinary endeavor, we adopt approaches suggested and widely used in both social sciences and natural sciences.

We focus on a specific genetic marker related to human dopamine systems: the transporter gene *DAT1* (also called *SLC6A3*). Dopamine systems play a pivotal role in modulating human approach, motivation, and reward systems (Depue & Collins, 1999; Wise & Rompré, 1989). Dopamine has been suggested to underlie important leadership functions (Bass & Bass, 2008; De Neve et al., 2013; Senior et al., 2009). We thus focus on the dopamine transporter gene *DAT1* because it has been shown to bear consistent and significant relationships with impulsivity, approach-related behaviors, and self regulation in a recent meta-analysis (Gizer, Ficks, & Waldman, 2009). Such variables, along with other closely related constructs, have been theorized and found to play important roles in driving leadership (see below for more details, Avolio, Rotundo, & Walumbwa, 2009; van Vugt, 2006; van Vugt, Hogan, & Kaiser, 2008).

In Study 1, we examine the indirect effect of the dopamine genetic marker on leadership role occupancy through proactive personality, an important personality construct representing agentic initiative taking and self regulation. As a unique and compound personality trait distinctive from the Big Five, *proactive personality* refers to a relatively stable tendency to initiate positive environmental changes (Bateman & Crant, 1993). Previous research has shown its incremental predictive validity above and beyond the Big Five (Fuller & Marler, 2009; Tornau & Frese, 2013). The construct includes three core characteristics: planfulness/future orientation, initiative/change orientation, and persistence in goal striving (Bateman & Crant, 1993; Bindl & Parker, 2010; Frese & Fay, 2001; Grant & Ashford, 2008). Hence, it encompasses multiple influences through which specific genes may be related to leadership. Results of Study 1 show that the *DAT1* 10-repeat allele had significant and *negative* indirect effects on leadership via proactive personality but the overall relation was not significant. Such results suggest other possible *positive* pathways that may run counter to the pathway through proactive personality (MacKinnon, Fairchild, & Fritz, 2007).

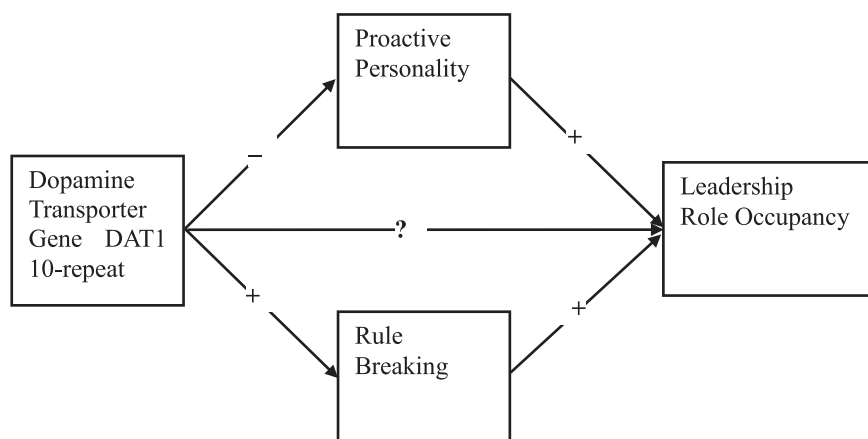


Fig. 1. Proposed theoretical model for the relationship between dopamine transporter gene *DAT1* 10-repeat allele and leadership role occupancy. The mediating role of proactive personality was tested in Study 1. The full model was examined in Study 2.

Download English Version:

<https://daneshyari.com/en/article/887778>

Download Persian Version:

<https://daneshyari.com/article/887778>

[Daneshyari.com](https://daneshyari.com)