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Chimpanzee (*Pan troglodytes*) personality predicts behavior

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Abstract

Forty-nine zoo-housed chimpanzees were rated on 43 adjectival personality descriptors. The descriptors were used to calculate values for six personality factors that had been previously determined. The six factors included Dominance, Extraversion, Agreeableness, Dependability, Emotionality, and Openness. Frequencies of 25 specific behaviors were independently recorded. The behaviors were categorized into five social contexts: Agonistic, Submissive, Affinitive, Solitary, and Public Orientation. Agonistic context behaviors were positively associated with Dominance and Emotionality, and negatively associated with Agreeableness and Dependability. Extraversion was positively associated with Affinitive context behaviors and negatively associated with Public Orientation. The pattern of significant and nonsignificant personality–behavior correlations was largely consistent with the construct validity of the personality factors.
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1. Introduction

An important assumption of Charles Darwin's theory of evolution was that behavior as well as related psychological, perhaps even "intentionalist," components

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of the animal mind were bases for natural selection (Darwin, 1871/1981). The most direct route through which personality traits can contribute to individual differences in fitness is through personality linkages with behavior. The importance of heritable behavioral traits in driving evolution has been emphasized by many authors (e.g., Maynard-Smith & Szathmary, 1995; Mayr, 2001). In addition, variability of personality is large relative to other types of phenotypic variation (Bouchard & Loehlin, 2001) perhaps reflecting the adaptive value of enhanced variability of personality. These considerations indicate the importance of understanding the behavioral manifestations of the large individual differences in personality for humans as well as animals.

Despite the importance of associations between personality and behavior, the existing human data are limited in the range of behaviors studied and the contexts in which the behaviors occur (Funder, 1999, 2000). Funder (2000) notes that personality psychology has largely focused on hypothesis testing and devalued the importance of descriptive data that would show the behavioral manifestations of personality variables. Animal studies of the personality–behavior association have some potential advantages over comparable human studies. For example, animal studies may allow long term observation of behaviors including important behaviors that are not easily observed in humans (e.g., overt aggression). Furthermore, a growing literature indicates that animal personality measurements have good psychometric properties including interrater reliability (Gosling, 2001; Gosling & Vazire, 2002). In this study, we report evidence for the personality–behavior relationship in zoo-housed chimpanzees.

Understanding of the personality–behavior linkage can be approached fruitfully within the context of construct validity. In fact, after establishment of interrater reliability of personality measures, particularly those based on subjective ratings, the next most important issue is the construct validity of the measures (Campbell & Fiske, 1959; Cronbach & Meehl, 1955). Construct validity becomes relevant when a trait (e.g., a personality dimension) is not operationally defined but is assumed to have a predictable pattern of correlations with other independent measures based on either a theory or, more simply, the implied meaning of the trait. As applied to prediction of behavior by personality, construct validity of personality factors would have two components. The first, convergent validity, is the presence of significant correlations between two independent measures of the same construct, such as a personality score and a behavior, that are both expected expressions of a latent variable, e.g., "aggressiveness." The second, discriminant validity, is the absence of significant correlations between measures of unrelated constructs. In other words, personality traits should not be correlated with behaviors that are inconsistent with definitions of the traits. In this study, we were concerned with personality–behavior associations and their relationship to the semantic meanings of items defining the factors. Our approach was largely descriptive, not theoretical; it was based on correlations between personality and behavior that were consistent with the implied meanings of the personality factors.

Fortunately, research on the personality–behavior relationships in nonhumans has been straightforward without the exotic diversions into the social-constructivist debates that afflicted human personality research for many years (see Funder, 1999;

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