



Investigating personality in stuttering: Results of a case control study using the NEO-FFI

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ABSTRACT

A recent study by Iverach et al. (*Journal of Communication Disorders*, 2010) compared persons who stutter with two normative samples in the context of the five-factor model of personality measured by the NEO Five-Factor Inventory (NEO-FFI). Persons who stutter were characterized by higher *Neuroticism*, lower *Conscientiousness* and lower *Agreeableness* scores in contrast to the normative data from an Australian and a United States sample. Moreover, the authors report that the scores on all five personality dimensions in the stuttering group were within those of the normative samples. A shortcoming of the Iverach et al. study is the lack of a matched control group. In the present study we compared persons who stutter with a control group matched to age and gender. Furthermore, none of the controls had a history of personal and family stuttering. The findings with respect to *Neuroticism* could be replicated in our sample. But in contrast to Iverach et al. we found higher *Conscientiousness* and *Agreeableness* scores in persons who stutter compared to the control group.

Learning outcomes: The reader of the present study will learn that elevated *Neuroticism* scores can be observed in persons who stutter across cultures such as Germany or Australia. With respect to other personality dimensions such as *Conscientiousness* or *Agreeableness* the picture is much more difficult.

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1. Introduction

Persistent developmental stuttering is a speech disorder with a prevalence of about 1% among adults (Bloodstein & Bernstein Ratner, 2008) that can severely hinder communication and quality of life (Yaruss, 2001). Several studies investigated and discussed stuttering in the context of personality and temperament (Alm & Risberg, 2007; Anderson, Pellowski, Conture, & Kelly, 2003; Prins, 1972; Schwenk, Conture, & Walden, 2007; Seery, Watkins, Mangelsdorf, & Shigeto, 2007; Van Riper, 1982). Convincing arguments for the hypothesis that stable traits are causal factors in the development of stuttering do not exist so far (Bloodstein & Bernstein Ratner, 2008). Furthermore it is still unclear if the speech disorder has a significant impact on the personality of the afflicted persons. The empirical findings in this area are mixed and sometimes controversial (for a very good overview, see again Bloodstein & Bernstein Ratner, 2008). In consideration of the various methodological approaches used in the diverse studies, inconsistencies in the findings are not surprising. One of the reasons

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for contradictory results in the field is a lack of use of standardized questionnaires measuring personality. This has been pointed out explicitly very early by Goodstein (1958). Another reason for the heterogeneous findings could be that the studies used different kinds of control groups. For instance, Walnut (1954) compared the Minnesota Multiphasic Personality Inventory (MMPI) scores of a stuttering population with the norms of the MMPI (Hathaway & McKinley, 1943), Sermas and Cox (1982) compared the MMPI scores of persons who stutter with MMPI scores of psychiatric patients, and Treon, Dempster, and Blaesing (2006) with MMPI scores of a carefully matched control sample. The three studies led to ambiguous results. Bloodstein and Bernstein Ratner (2008) mentioned in this context that it is risky to compare collected personality data from a stuttering population with published test norms and emphasize the importance of selected case-control groups. In order to prevent ambiguity regarding the link between stuttering and personality, it is furthermore essential to use the same inventories when doing replication studies. When such studies were conducted in different cultures, it is of additional importance to consider potential cross-cultural personality differences (Terracciano & McCrae, 2006).

Recently, Iverach et al. (2010) published an interesting study in the field of personality and stuttering. The authors searched for an association between the prominent five-factor model of personality and stuttering. The so-called Big Five include the personality dimensions *Extraversion*, *Neuroticism*, *Openness to Experience*, *Conscientiousness*, and *Agreeableness* as measured by the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Susca (2006) suggested before to administer this valid and reliable inventory when comparing personality traits of people who stutter and people who do not stutter.

Iverach et al. reported that 93 adult participants seeking speech treatment for stuttering in Australia and New Zealand were associated with significantly higher *Neuroticism*, lower *Conscientiousness* and lower *Agreeableness* scores compared to normative data from an Australian and an United States sample. The personality self-report scores of the stuttering group were within the average range for all five personality dimensions. Convincingly, the authors expected that besides higher *Neuroticism* scores, persons who stutter would also be associated with lower *Extraversion* scores. This hypothesis could not be confirmed. As mentioned by Iverach et al. in their discussion, a problem of their study design is a lack of a matched control group. This might bias their findings, because the male gender is more prevalent in persons who stutter (about two to four times more men than women stutter; Craig & Tran, 2005; Yairi & Ambrose, 2005), whereas both sexes are equally distributed in the normal population. As pronounced differences between males and females exist with respect to personality dimensions linked to negative emotionality (such as neuroticism) (Chapman, Duberstein, Sørensen, & Lyness, 2007; Costa, Terracciano, & McCrae, 2001), it is also of particular importance to take into account the gender distribution by using once again a case-control design. Furthermore, Iverach et al. cannot control for the fact that there are also persons who stutter in their used normative samples.

Following this argumentation line, we would like to add to the findings of Iverach et al. our present NEO-FFI scores of a stuttering sample that was compared to a sex- and age-matched control group of persons who had no personal or family history of stuttering.

2. Materials and methods

2.1. Participants

The experimental group consisted of 87 persons who stutter, including 63 men (72.4%) and 24 women (27.6%), and a sex- and age-matched control group of 87 persons who had no personal or family history of stuttering. Mean age of the stuttering group ($M = 34.93$ years, $SD = 12.82$) and of the control group ($M = 32.20$ years, $SD = 12.04$) did not differ significantly as shown by an ANOVA model ($F(1, 172) = 2.11$, $p = .15$). Moreover, the gender subgroups did not differ significantly in age, either. When comparing our stuttering group to that of Iverach et al. no significant differences in age ($t(179) = 1.16$, $p = .25$) and gender distribution ($\chi^2 = .42$, $df = 1$, $p = .52$) were observed.

2.2. Recruitment of participants

Persons who stutter were recruited at an annual meeting of the German Stuttering Association (German abbreviation: BVSS), at local meetings of self-help groups for people who stutter, and in the context of group therapies for stuttering. Persons who stutter were required to meet the following eligibility criteria before being accepted to the study: (1) age 16 years and over; (2) developmental stuttering present before 12 years of age; (3) presence of stuttering already confirmed by a speech and language pathologist.

The control group was recruited at the University of Bonn, Germany, and met the following inclusion criteria: (1) age 16 years and over; (2) no personal or family history of stuttering. All eligibility criteria in this study were determined by self-reports.

In terms of stuttering history, 58.6% of the persons who stutter reported a family history of stuttering ($n = 51$), 96.6% reported receiving previous treatment for stuttering ($n = 84$), and 64.4% reported being a member of a self-help group ($n = 56$). The self-reported age of onset of stuttering ranged from 2 to 11 years ($M = 4.44$, $SD = 1.82$).

The study was approved by the ethics committee of the University of Bonn. All subjects gave informed consent before participating in the study.

2.3. Material and procedure

All participants completed a paper and pencil version of the German NEO Five-Factor Inventory (NEO-FFI) (Borkenau & Ostendorf, 1993; Costa & McCrae, 1992). This well established questionnaire consists of 60 items with a 5-Likert scale

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