Personality disorders in adopted versus non-adopted adults

Joseph Westermeyer [a,b,*], Gihyun Yoon [a,b], Carla Amundson [a], Marion Warwick [a],
Michael A. Kuskowski [a,b]

[a] Minneapolis VA Health Care System, Minneapolis, MN, USA
[b] Department of Psychiatry, University of Minnesota, Minneapolis, MN, USA

ABSTRACT

The goal of this epidemiological study was to investigate lifetime history and odds ratios of personality disorders in adopted and non-adopted adults using a nationally representative sample. Data, drawn from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC), were compared in adopted ($n=378$) versus non-adopted ($n=42,503$) adults to estimate the odds of seven personality disorders using logistic regression analyses. The seven personality disorders were histrionic, antisocial, avoidant, paranoid, schizoid, obsessive–compulsive, and dependent personality disorder. Adoptees had a 1.81-fold increase in the odds of any personality disorder compared with non-adoptees. Adoptees had increased odds of histrionic, antisocial, avoidant, paranoid, schizoid, and obsessive–compulsive personality disorder compared with non-adoptees. Two risk factors associated with lifetime history of a personality disorder in adoptees compared to non-adoptees were (1) being in the age cohort 18–29 years (but no difference in the age 30–44 cohort), using the age 45 or older cohort as the reference and (2) having 12 years of education (but no difference in higher education groups), using the 0–11 years of education as the reference. These findings support the higher rates of personality disorders among adoptees compared to non-adoptees.

Published by Elsevier Ireland Ltd.

1. Introduction

Previous studies of adoptees have shown higher rates of academic problems (Brodzinsky et al., 1984; Verhulst et al., 1992), behavioral problems (Bimmel et al., 2003; Juffer and van Ijzendoorn, 2005), maladjustment (Wierzbicki, 1993), substance abuse (Westermeyer et al., 2007; Yoon et al., 2012), and psychiatric disorders (Hjern et al., 2002; Tieman et al., 2005; Van DerVegt et al., 2009) compared to non-adoptees. Emotional problems during the years of personality development were increased in adoptees (Schechter et al., 1964). Studies on personality traits have compared adoptees with non-adoptees during childhood, in both clinical and population samples. For example, inter-country adopted adolescents had more deviant and aggressive behaviors than non-adopted adolescents (Versluis-den Bieman and Verhulst, 1995). International adoptees in Sweden had an increased rate of social maladjustment, such as a criminal offenses or imprisonment compared with the general population (Hjern et al., 2002).

In the United States (U.S.), adopted adolescents had higher odds of externalizing disorders (odds ratio [OR] 2.34, 95% CI 1.72–3.19),

including attention-deficit/hyperactivity disorder, conduct disorder, and oppositional defiant disorder, than non-adopted adolescents (Keyes et al., 2008). Another U.S. study showed that adopted adolescents had more school problems (more skipping school, less positive about school), more psychological problems (more emotional distress, lower self-esteem, and lower future hope), and other problems (fighting and lying to parents) compared to non-adopted adolescents (Miller et al., 2000). Other characteristics more prevalent among adoptees have included delinquent behavior (Sharma et al., 1998), interpersonal difficulties, oppositional behavior, aggressive behavior (Austad and Simmons, 1978), and antisocial behavior (Offord et al., 1969). In a clinical sample of 35 adoptees seen in a psychiatric hospital in Missouri, adoptees had a higher incidence of personality disorders compared to the entire clinical sample (Simon and Senturia, 1966). A study of international adoptees in the Netherlands showed that more schizoid symptoms were associated with increasing age at placement among adopted girls (Verhulst et al., 1990). In a community sample, antisocial personality disorder was more prevalent among adoptees (Sullivan et al., 1995).

Several studies have investigated adoption as a risk factor in specific personality disorders (Kendler et al., 2008; Reichborn-Kjennerud, 2008), such as antisocial (Cadoret et al., 1995; Crowe, 1974; Lengbehn et al., 2003; Torgersen et al., 2008), schizotypal, schizoid, paranoid (Kendler et al., 2007), avoidant (Tienari et al.,

2003), dependent, and obsessive–compulsive personality disorder (Reichborn-Kjennerud et al., 2007). However, these studies have not compared rates of personality disorders among adopted and non-adopted individuals using a nationally representative sample.

The goal of this epidemiology study was to compare the lifetime prevalence of seven personality disorders in adopted and non-adopted adults in the U.S., using a nationally representative sample. We also examined potential demographic risk factors associated with personality disorders. Rationales for studying personality disorder among adoptees in a national sample included (1) assessing whether life history of personality disorder was higher, as suggested by previous studies, (2) considering whether certain personality disorders were more-or-less common in adoptees, (3) searching for cohort changes in lifetime history of personality disorder among adoptees, and (4) examining whether any demographic factors might permit early identification of adoptees at risk.

2. Methods

2.1. Participants

These data derived from the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a nationally representative sample of 43,093 adults aged 18 and older living in the United States (Grant et al., 2004). NESARC data consisted of socio-demographic characteristics, alcohol and drug use, psychiatric diagnoses, treatment utilization, and medical conditions. The U.S. Census Bureau and the U.S. Office of Management and Budget reviewed and approved the research procedures. Trained surveyors conducted face-to-face interviews in household settings under the auspices of the U.S. Census Bureau and the National Institute of Alcohol Abuse and Alcoholism. The overall response rate reached 81%, with a household response rate of 89% and individual response rate of 93%. All participants provided informed consent. The current epidemiology study was based on a subsample of 42,881 participants after excluding 212 people who did not know their adoption status. The percentage of adoptees (n= 378) was 0.88%.

2.2. Assessment

The participants' demographic characteristics included age cohort, gender, race/ethnicity, education, marital status, and personal income. The Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version [AUDA-DIS-IV] (Grant et al., 2003) generated lifetime history of a personality disorders based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, or DSM-IV (American Psychiatric Association, 1994). The AUDADIS-IV has produced fair-to-good test-retest reliability for assessing lifetime history of a personality disorders as follows: paranoid (kappa 0.42), schizoid (kappa 0.53), antisocial (kappa 0.67), histrionic (kappa 0.40), avoidant (kappa 0.45), dependent (kappa 0.66), and obsessive–compulsive personality disorder (kappa 0.52). Intra-class correlation coefficients (ICC) revealed fair to good reliability for each AUDADIS-IV personality disorders as follows: paranoid (ICC 0.60), schizoid (ICC 0.56), antisocial (ICC 0.79), histrionic (ICC 0.50), avoidant (ICC 0.55), dependent (ICC 0.73), and obsessive–compulsive personality disorder (ICC 0.55).

The participants' responses to two queries determined their adoption status: (1) "Did you live with at least one of your biological or birth parents at any time when you were growing up, that is before you were 18 years old?" If participants answered "no," the second question was asked: (2) "When you were growing up, before the age of 18, were you raised by adoptive parents?" Those answering "no" to question 1 and "yes" to question 2 were categorized as adoptees. By definition, adopted persons in this study were raised by adoptive parents and had not lived with any biological parents while growing up.

2.3. Statistical analysis

Adoptees and non-adoptees served as the two independent groups. Demographic factors functioned as potential modifiers for the outcomes. Lifetime prevalence rates of the personality disorders comprised the outcomes. The first analyses (Tables 1 and 2) involved descriptive comparisons of these variables.

Logistic regression models produced odds ratios and their 95% confidence intervals (CI) to examine the effects of adoption on lifetime history of a personality disorders. As shown in Table 2, we first estimated unadjusted odds ratio (OR). Next, we estimated adjusted odds ratio (AOR) adjusting for the covariates age cohort, gender, race-ethnicity, education, and marital status. These covariates were chosen for analysis due to their association with adoption and/or personality disorders in previous studies. Personal income was not included because of its unclear

association with personality disorder, plus the absence of a significant relationship with adoption status in this study (Table 1).

Finally, a series of logistic regression analyses were conducted to identify whether demographic risk factors might exist for any lifetime history of a personality disorder (see Section 3.3 below). Intra-class correlation effects between adoption status and other potential risk factors (age, gender, race-ethnicity, education, and marital status) were examined in logistic models to determine if any of these demographic variables modified the effect of adoption status on personality disorder.

Since this is an epidemiological study comparing prevalence rates, we have employed 95% confidence intervals in Table 2. The study also explores the effect of demographic variables on these prevalence rates, so we have utilized the Bonferroni correction to set a conservative threshold for significance in Table 1 (i.e., 0.05/ × number of comparisons, or 0.008 for Table 1).

3. Results

3.1. Socio-demographic characteristics

Three of the six demographic variables differed by adoption status. First, both adoptees and non-adoptees had about the same percentage (around 20%) of 18–19 years old (Table 1). However, adoptees were about one-third more apt to be in the age cohort 30–44 years old and about one-fifth less apt to be in the age cohort 45 years or older as compared to non-adoptees ($p < 0.001$). Second, Whites, Native Americans, and Asian/Pacific Islanders were over represented among adoptees, whereas Blacks and Hispanic/Latinos were notably under represented ($p < 0.001$). Third, adoptees had more education beyond high school compared with non-adoptees ($p = 0.001$). Gender, current marital status, and current personal income did not differ significantly across adoption status.

3.2. Personality disorders

As shown in Table 2, the ORs and AORs for personality disorders closely resembled one another in terms of the 95% CI significance. The AORs were slightly lower than the ORs, although the differences were all under 5%, suggesting relatively small influence of the five demographic characteristics on the adoption-to-personality-disorder relationship. In addition, probability levels were the same for both ORs and AORs within each personality disorder.

Adoptees showed 1.81 times greater odds of lifetime prevalence of any personality disorder (95% CI 1.42–2.29). Six of the seven personality disorders were more common among adoptees: histrionic (AOR 2.13), antisocial (AOR 2.02), avoidant (AOR 2.01), paranoid (AOR 1.71), schizoid (AOR 1.64), and obsessive–compulsive personality disorder (AOR 1.59). Dependent personality disorder (AOR 2.31, 95% CI 0.85–6.27) was not associated with adoptive status.

3.3. Risk factors for lifetime history of a personality disorder

Logistic regression models were computed to examine potential interaction effects between adoption statuses with demographic variables (age, gender, race/ethnicity, education, and marital status) as predictors of any lifetime history of personality disorder. A significant pattern was revealed for the adoption × age interaction. The youngest participants (18–29 years) had significantly higher odds of a lifetime history of personality disorder relative to the 45 years or older reference group in adopted subjects versus non-adopted participants (OR=2.66, 95% CI: 1.38 – 5.12, $p = 0.003$). This differential age-effect in adopted versus non-adopted was not present when participants aged 30–44 years were compared with the 45 years or older reference group (OR=1.35, 95% CI: 0.74 – 2.48, $p = 0.33$). An interaction effect of education by adoption status was found for 12 years education, versus 0–11 years of education