



Educational attainment and cognitive competence in adopted men – A study of international and national adoptees, siblings and a general Swedish population

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ABSTRACT

Internationally and nationally adopted young men were recently reported to have lower than average scores on intelligence tests at military conscription, compared with non-adopted conscripts in Sweden. In this study we used the Swedish national registers to analyse how this lower cognitive competence influences the educational attainment of adoptees. Intelligence test scores at conscription were analysed in relation to educational attainment at follow-up at 25–34 years in male international ($n=2,314$) and national ($n=1,153$) adoptees, compared with the general population in the same birth cohorts.

Korean adoptees more often had obtained a post-secondary education compared with the general population while Non-Korean and national adoptees less often had such an education at follow-up. The international adoptees had a better chance than the general population to complete a post-secondary level and a lower risk to remain at a basic level when their cognitive competence, as measured by intelligence test scores, had been accounted for. This effect was quite similar in biological children in families of international adoptees who had the best test scores, in the Korean adoptees who had slightly better test scores than the general population, and in the Non-Korean adoptees who had considerably lower test scores. National adoptees had similar outcomes in these respects as the general population when test scores had been accounted for. Higher age at adoption was associated with a lower educational attainment in the Non-Korean but not in the Korean adoptees, an effect that was attenuated when test scores were accounted for.

We conclude that a lower than average cognitive competence did influence the educational attainment of the Non-Korean international and the Swedish-born adoptees in this study. International but not national adoptees had attained a higher educational level than predicted from their scores on intelligence tests. This education promoting effect was similar in the Korean adoptees, who had high test scores in comparison with the general population, and the Non-Korean adoptees who had comparatively low test scores.

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1. Introduction

Educational attainment among international adoptees has become an important issue in Western Europe in recent years since many adoptees have reached young adulthood and have to cope with the high educational demands of the labour market in post-industrialised societies. An important determinant of educational attainment is cognitive competence. A delayed cognitive development and a lower than average cognitive competence seems to be more prevalent in national as well as international adoptees than in non-adopted individuals (Bohman & Sigvardsson, 1990; Brodzinsky, Schechter, & Henig, 1992; Dalen, 1995, 2001; van Ijzendoorn, Juffer, & Klein Poelhuis, 2005; Verhulst, Althaus, & Verluis-den Bierman, 1990, 1992). A general pattern in previous studies is a great disparity between subgroups of international adoptees (Odenstad et al., *in press*). Results from research on cognitive competence in international adoptees are not conclusive. According to a recent meta-analysis, cognitive competence is equal in adoptees and non-adoptees (van Ijzendoorn et al., 2005). Contrarily, in a recent national cohort study we found lower scores on intelligence tests in male internationally adopted conscripts than in non-adopted Swedish residents in the same age (Odenstad et al., *in press*). Non-Korean adoptees, for instance, had a mean 3.4 on the 9-graded global scale compared with a mean of 5.3 points in non-adopted conscripts.

Cognitive competence is closely connected with school performance and educational attainment. Many studies have reported that international adoptees do not perform as well as non-adoptees in school (Dalen, 2001; Kvifte-Andresen, 1992; van Ijzendoorn et al., 2005). The meta-analysis carried out by van Ijzendoorn et al. (2005) concludes that there is a gap between the international adoptees' cognitive competence and their school performance, meaning that the adoptees perform on a lower level than their cognitive potential would indicate, an "adoption decalage". This gap was reported to be largest among children with an extremely deprived background and among children with an adoption age above one year. Using education attainment as outcome measure in a study of whole national cohorts of international adoptees ($n=5,942$), Lindblad, Hjern, and Vinnerljung (2003) extended previous research about academic performance by reporting equal risks for remaining at the basic level/reaching university level in international adoptees and the majority population in age and sex adjusted models. Compared with the biological offspring in these adoptive families, however, fewer international adoptees had obtained a post-secondary education.

Many factors may influence cognitive competence in adoptees. A common way to discuss these matters is to focus on pre-adoption and post-adoption factors. Among the former, pre-natal conditions such as maternal malnutrition and pre-natal alcohol exposure during pregnancy may be influential just as post-natal conditions like neglect and maltreatment (Miller, 2000; Mitchell, 2001). One example of potential neglect is being placed in an institution with insufficient resources for stimulating children's development, a common experience among international adoptees (Gunnar & Kertes, 2005; Johnson, 2002; Rutter, 2005; Vorria et al., 2006). Studies on institutionalized children adopted from Romania have reported significantly reduced activation in a number of brain areas believed to be involved in higher cognitive functioning (Becket et al., 2006; Chugani et al., 2001; Rutter, 2005).

A general problem when studying the development of international adoptees is that information about experiences before adoption is scarce. If the child is exposed to pre-adoption adversity, age of adoption may serve as a proxy of the magnitude of this exposure (Croft et al., 2007; Gunnar & Kertes, 2005; Juffer & van Ijzendoorn, 2005; Marcovitch et al., 1997; O'Connor et al., 2000; Rutter, 2005; Rutter et al., 2007; van Ijzendoorn et al., 2005). Thus, studies on adoptees from Romania indicate that age of adoption has some effects on children's further cognitive development (Becket et al., 2006; Croft et al., 2007; O'Connor et al., 2000). Becket et al. (2006) found that children with an adoption age less than 6 months did not have a delayed cognitive development and their IQ scores were similar compared with nationally adopted children in UK. However, children adopted later than 6 months had signs of a delayed cognitive development, and these children did not catch up with the comparison group. In a Swedish register study an age at adoption above four was associated with a lower educational attainment (Lindblad et al., 2003).

Interestingly, in most studies adoptees from South Korea display higher cognitive competence and better language skills as well as school performances than adoptees from other countries of origin (Bagley, 1993; Dalen, 2001; Frydman & Lynn, 1989; Kim, 1995; Kim, Shin, & Carey, 1999; Kvifte-Andresen, 1992; Lindblad et al., 2003; Odenstad et al., *in press*; Verhulst et al., 1990, 1992). One reason is likely to be the quality of care before adoption (Chandra, Abma, Maza, & Bachrach, 1999). For many decades, South Korea has been known for its high-level control of adoption agencies. Since the 1960ies, agency staff requirements include a psychologist, a physician and a nurse. At least 50% of the children's counsellors must have four year college level social work training (Kim & Carroll, 1975). In addition to well functioning orphanages, adoption agencies in Korea have also operated pre-adoptive foster family homes for many years as an alternative to infant residential care (Tahk, 1986). Another reason may very well be the selection of children put up for international adoption in Korea. The literature indicates strongly that the main bulk of Korean adoptive children, born in the 1970ies and the 1980ies, was born out of wedlock and relinquished by their mothers due to socio-cultural prejudices toward single parenthood, not unlike the situation in Sweden during the 1950ies (Bohman & Sigvardsson, 1990; Kim, 1995; Tahk, 1986). Selection criteria and quality of care of the biological mother as well as of the child to be adopted in other donor countries probably vary considerably more, thus indicating that Korean adoptees are favoured on both these aspects (Fonseca, 2002; Triselotis, 2000). Henceforth, for the analyses in this paper we have hypothesised that country of origin (Korean/Non-Korean), in addition to age at adoption, may serve as a crude proxy of pre-adoption conditions.

When it comes to post-adoption factors, adoption in itself seems to have a positive effect on children's intellectual and cognitive development (Bohman & Sigvardsson, 1990; Dennis, 1973; Hodges & Tizard, 1989; Rutter, Kreppner, O'Connor, & ERA Study Team, 2001; van Ijzendoorn & Juffer, 2006; van Ijzendoorn et al., 2005). The process of adoption usually involves a move from deprived institutional or unfavourable settings to better environmental conditions in the adoptive family. Particularly positive effects on cognitive development have been found when adoption has brought about radical changes of environment as

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