Childhood intelligence and personality traits neuroticism and openness contribute to social mobility: A study in the Aberdeen 1936 Birth Cohort

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A B S T R A C T
Background: Social mobility has been linked to intelligence, education, personality traits and childhood socioeconomic status (SES). We explore these influences to evaluate their relative importance as sources of individual differences in social mobility.

Methods: Data are from the Aberdeen Birth Cohort of 1936 (ABC36) for whom childhood intelligence scores are available. Social mobility of participants was estimated from comparisons between their childhood and adult circumstances age 64. Personality traits were assessed using the Five Factor model. Structural Equation Modelling was used to investigate the influence on social mobility of socioeconomic variables, childhood and adult intelligence, education and personality traits.

Results: Controlling for childhood socioeconomic status and childhood intelligence, upward social mobility is predicted by personality traits of Openness (positive) and Neuroticism (negative). Neuroticism had a significant direct influence on mobility after. Openness had an indirect effect via Education and adult cognitive ability.

Education, childhood and adult cognitive ability are significant influences on mobility.

Conclusions: Socioeconomic destination is determined in this sample by childhood intelligence and socioeconomic status and the adult personality traits of Openness and Neuroticism. Educational exposure and gains in cognitive ability over the life course mediate these influences.

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1. Introduction

A complete understanding of the interaction between potential drivers of social mobility and their prospects for modification is yet to be realized. At the population level, two broad and inter-related trajectories of life course development reveal the many possibilities for a sustained intergeneration reproduction and accentuation of social, economic and health inequalities. Notably, within cohorts, as people develop from childhood through to old age, there is a tendency for increased diversity across a range of social, economic, and health outcomes coupled with a systemic pattern of cumulative advantage/disadvantage (Dannefer, 2003). In other words, as cohorts develop throughout the life course patterns of increased diversity within any single group are not purely random. Cumulative advantage/disadvantage (CAD) highlights a systemic pattern of divergence of developmental outcomes whereby, 'initial comparative advantage of trained capacity, structural location, and available resources make for successive increments of advantage such that the gaps between the haves and the have-nots increase' (Merton, 1968). Support for CAD theory comes from studies of both income and health inequalities, with systemic patterns of inter-individual divergence repeatedly observed for different cohorts across decades of international research, even in the context of dramatic changes in the absolute amount of age-specific inequality or poverty (Dannefer, 2003).

Although lifespan developmental theories focused specifically on social mobility are lacking, the individual and environmental variables that influence social mobility are likely to be multi factorial and multilevel. Indeed, Bronfenbrenner previously proposed a model (Bronfenbrenner, 1979) that describes an ecological multilevel system within which humans interact and develop over time. Bronfenbrenner proposed that development is influenced by interactions across different system levels, that is, between individuals and proximal institutions and groups including family, peers, school, religious groups, the interactions between multiple micro-systems, and broader socio-cultural factors that change over time. While the limited availability of longitudinal data makes it difficult to account for all factors at all levels.

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across the life course, evidence suggests that social structural factors such as socioeconomic status of one's parents and educational opportuni-
ties and individual factors such as intelligence, personality and moti-
vation can influence both the intergenerational reproduction and accen-
tuation inequalities, while influencing patterns of social mobility within cohorts (Forrest, Hodgson, Parker, & Pearce, 2011, Crystal & Shea, 1990). As such, within the broader cumulative advantage/disad-
vantage profile, research suggests that there are also unique and varied
trajectories of both upward and downward social mobility.

Social mobility is defined as “the movement of an individual between
social classes over his or her life course” (Forrest et al., 2011). Mobility
and social inequalities in health are among the most important topics
in social epidemiology. Lower economic and social status at the individ-
ual level and high economic and social inequalities at the population
level have a negative effect on health (Lynch et al., 2004; Lorgelly &
Lindley, 2008). Although it is unclear if upward social mobility can im-
prove health and reduce mortality, there is some optimism that it
might (Hart, Smith, & Blane, 1998). If so, identification of the nature and strength of factors that facilitate social mobility as well as those
that obstruct it would be relevant to public policies that aim to amelio-
rate social inequalities in health.

Controversy remains about the nature of major influences on social
inequalities. It was not unusual in the last century to encounter forceful
arguments that the lower classes carried personal responsibilities for
their poor position. Over time, interest shifted towards the study of in-
dividual differences in personal attributes and social circumstances
that might promote social mobility (Mackenbach, 2010). These include
differences in general cognitive ability (intelligence), personality,
and indicators of the origins of the diseases in foetal development and dur-
ing a disadvantaged childhood (Whalley, 2006). The wide range of so-
cial structural influences on social mobility includes geographical
variation in school education, economic opportunities and temporal
trends in funding of education and occupational opportunity (de Vries
& Rentfrow, 2016). Personal attributes such as intelligence and person-
ality may also be important, but we currently have limited insight into
their relative influence on social mobility.

The influence of intelligence and education level on social mobility has
been examined in a handful of studies. For example, Cassidy and Lynn
(Cassidy & Lynn, 1991), in a longitudinal study tracking young people
from ages 16 to 23 years, found that higher levels of educational attain-
ment and achievement motivation, but not parental socioeconomic sta-
tus, predicted upward social mobility. Although higher intelligence did
not directly influence social mobility in the study by Cassidy and Lynn,
it had a positive effect on educational attainment. Another study tracking
social mobility between ages five and 49–51 years (Forrest et al., 2011)
found that both achieved education level and childhood IQ were signifi-
cantly and independently associated with upward social mobility.

In relation to personality, Elder (1969) examined longitudinal trajec-
tories of social mobility in a sample of 69 men from high school through
to adulthood (ages 33–38 years) and found that, during adolescence, the
upwardly mobile were more ambitious and scored higher on personal-
ity measures of ego integration and competence. Evidence from cross-
sectional studies also suggests that personality may influence patterns
of social mobility. For example, Turner and Martinez (1977) found
that women scoring higher on a Machiavellian personality scale (i.e., a
disposition to focus on power; being cool, distant, and manipulative)
achieved higher levels of occupational prestige and higher income levels.
However, for men, a similar positive relationship was only found for those with above-average educational attainment. Converse-
ly, a negative relationship between Machiavellian personality and occu-
pational prestige and higher income levels was observed for men with
below-average educational attainment.

Other cross-sectional studies have found that higher scores on per-
sonality traits of Neuroticism and Agreeableness and lower scores on
Conscientiousness, Extraversion and Openness are more frequent in
lower status occupations (Chapman, Fiscella, Kawachi, & Duberstein,
2010). Alessandri and Vecchione (2012) also found that stability (i.e.,
a personality factor characterised by higher conscientiousness, lower
neuroticism, and higher agreeableness), but not plasticity (i.e., higher
openness and extraversion) predicted better job performance. At the
same time, the role of personality in longitudinal trajectories of socio-
 economic status remains uncertain. The mechanism by which factors
combine and are mediated by life course exposures such as education
is also unclear. Authors such as Von Stumm, Gale, Batty, and Deary
(2009) and Cheng and Furnham (2012) have used structural equation
models to determine the direct and indirect influences of similar factors,
finding significant results for Extraversion and Conscientiousness and
‘focus of control’ which has been linked to Neuroticism. A longitudinal
study by Cassidy and Lynn (1991) found that an aggregate measure of
personality (including extraversion and neuroticism) was associated
with upward social mobility. However, the study by Cassidy and Lynn
focused on a narrow age range (ages 16 to 23 years) and included a lim-
ited range of predictors of social mobility and thus it remains unclear
how childhood intelligence, educational attainment and personality in-
fluence patterns of social mobility over the life course.

In a UK birth cohort study, we seek a better understanding of how so-
cial mobility is related to childhood socioeconomic status (SES), childhood
intelligence, early education, and adult personality. Absolute occupa-
tional intergenerational social mobility is difficult to capture in the context of
structural changes in the labour market in the UK. The UK in general
has reduced its manufacturing base in favour of more service industries,
although the exact nature of this shift varies from location to location. Ab-
derdeen, the city on which this study is centred, shifted from a provincial
city with a population reliant on light engineering, farming, shipbuilding
and fishing, in the mid twentieth century, to one predominantly centred
on the oil industry with an increase in service industries and with many
highly paid administrative jobs (Tiesdell & Allmendinger, 2004). Our
data are contemporaneous with the transformation of the labour market
in the post-war period and afford a unique opportunity to examine the
predictors of social mobility during a time of unprecedented socioeconomic improvement enjoyed in a single Scottish city. We are in the fortu-
nate position to hold data on Aberdeen residents who had taken part in
the Scottish Mental Survey of 1947 when aged about 11 years (Whalley
et al., 2011), thus allowing this life course analysis. In order to examine
factors that influence the movement of individuals between social classes
from early childhood to late life, we considered the direct effect of child-
hood socioeconomic status, childhood intelligence, and personality
on adult socioeconomic status, and also the indirect effect of these predictors
as mediated by education and adult cognitive ability.

2. Methods

2.1. The sample

All data were provided by the Aberdeen Birth Cohort of 1936. This is
a subsample of the Whalley et al. (2011) which was a national survey of
childhood intelligence. Children who sat the Scottish Mental Survey of
1947 in an Aberdeen City School were traced by gender, date of birth
and unmarried name using the Community Health Index, General Reg-
istrar Office public records and National Health Centre Records ( Scot-
land and England). The local Family Doctors’ Research Committee
requested that invitations to take part in the current study should be
made by letter, each signed by the prospective participant’s family doc-
tor to exclude those who were recently bereaved or suffering a life-
threatening illness. An extended description of recruitment and data ac-
quisition is available (Whalley et al., 2011). Following guidance by the
Local Ethics of Research Committee who approved study procedures,
volunteers gave written informed consent to a longitudinal observa-
tional study of brain ageing and health. We invited individuals who
could be matched exactly by birth name and date of birth with the Scot-
tish Mental Survey (1947) archive; 506 of 676 (75%) agreed to partici-
 pate. Of these, 443 participants provided personality data (213

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