



Childhood intelligence, self-esteem, early trait neuroticism and behaviour adjustment as predictors of locus of control in teenagers



Adrian Furnham^{a,b,*}, & Helen Cheng^{a,c}

^a Department of Psychology, University College London, London WC1E 6BT, UK

^b BI: Norwegian Business School, Nydalsveien 37, 0484 Oslo, Norway

^c ESRC Centre for Learning and Life Chances in Knowledge, Economics and Societies, UCL Institute of Education, University College London, London WC1H 0AL, UK

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ABSTRACT

This study explored a longitudinal data set of 3725 sixteen year olds examining parental social status (at birth), childhood intelligence, self-esteem, personality traits and behavioural problems (all measured at age 10) that influence teenage locus of control (measured at age 16). Correlational analysis showed that intelligence, measured by four tests at age 10, was the most powerful predictor of locus of control at aged 16, followed by self-esteem and then parental education and class, personality traits and behavioural problems. Structural equation modelling showed that childhood intelligence, self-esteem, trait neuroticism and behavioural problems were all independent predictors of locus of control at age 16, whilst parental social status predicted the outcome variable mainly through self-esteem. There were no gender differences in the outcome variable. Limitations, implications and suggestions for future research are considered.

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1. Introduction

There is a vast academic literature on the locus of control concept. Rotter (1966) defined locus of control (LOC) as followed: “When a reinforcement is perceived by the subject as not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labelled this a belief in *external control*. If the person perceives that the event is contingent upon his own behaviour or his own relatively permanent characteristics, we have termed this a belief in *internal control*” (p. 1).

LOC is conceived of as a belief that a response will, or will not, influence the attainment of reinforcement. It is not an expectancy concerning a particular type of reinforcement, but a ‘problem-solving’ generalised expectancy, addressing the issue of whether behaviours are perceived as instrumental to goal attainment, regardless of the specific nature of the goal or reinforcer. Locus of control is seen to influence the particular goal expectancy in any given specific situation depending upon the novelty and the ambiguity of the setting, as well as the degree

of reinforcement that the individual has directly experienced in that setting (Rotter, 1975).

Rotter (1990) attempted to explain the ‘enormous and somewhat surprising popularity’ of the internal versus external control of reinforcement variable. He attributed the heuristic value of the variable to four factors: the variable was precisely defined; the variable construct was imbedded in a broader theory, namely social learning theory; the scale developed to measure this variable was derived from psychological (social learning) theory (providing the best assurance of construct validity); and the fact that the construct was widely disseminated in a research monograph.

There has been criticism of the construct and an enormous increase in the measures developed to measure it. Indeed over 20 years ago Furnham and Steele (1993) noted eight conceptual and three methodological issues concerned with the literature but also a surprising number locus on control scales, some designed to measure specific beliefs (i.e., health LOC) or meant for certain groups (i.e., children’s LOC). Some measures do not have the LOC concept but use more common concepts like self-confidence to deal effectively with different situations (Shrauger, 1995; Cheng & Furnham, 2002). There have also been attempts to provide a biological theory for LOC (Declerck, Boone, & De Brabander, 2006).

There have been many studies to attempt to locate LOC in personality, specifically the Big Five, space. Results show small and inconsistent relationships (Wambach & Panackal, 1979). Perhaps the best known relationship is between neuroticism and LOC which prompted Judge, Erez,

* Corresponding author at: Department of Psychology, University College London, London WC1E 6BT, UK.

E-mail address: a.furnham@ucl.ac.uk (A. Furnham).

Bono, and Thoresen (2003) to develop the now well-known Core Self-Evaluations Scale which sees low self-esteem, neuroticism and external locus of control as highly correlated features of self-evaluations. Indeed there are many early studies using different measures and populations showing that LOC is related to depression and anxiety (Abramowitz, 1969; Butterfield, 1964; Rapee, Craske, Brown, & Barlow, 1996; Watson, 1967; Zawawi & Hamaideh, 2009). Most studies have been cross-sectional and it has therefore been impossible to determine whether external locus of control leads to anxiety and depression or the other way around.

This study is on LOC beliefs of adolescents. Various studies have looked at LOC as a mediator variable between early childhood experiences and later effects in adolescence like anxiety and depression (Culpin, Stapinski, Miles, Araya, & Joinson, 2015; Spokas & Heimberg, 2009). There have probably been more studies on the consequences rather than the causes of LOC (Carton, Norwicki, & Balster, 1996). Few studies have looked at the relationship between LOC and intelligence though in an early study Ollendick and Ollendick (1976) found intelligence and internal locus of control positively correlated as predicted.

A review of the literature indicates that LOC is nearly always treated as the independent rather than the dependent variable. This fact is recognised in many recent papers: for instance, Ahlin (2014) noted, "...we know little about the contextual factors that influence the development of LOC" (p. 2995). Ahlin and Antunes (2015) noted, "...very little is known about the antecedents of an internal LOC orientation. Without an understanding of what factors contribute to the development of an internal LOC, it is not clear how to best encourage its formation" (p. 1803). Those studies that have looked at antecedents have mainly concentrated on parental styles (Carton et al., 1996).

In this study we examined the effects of sociological and psychological variables on adolescent LOC. We predicted that parental social class and education are linked to their children's LOC in adolescence, specifically that poorer educated and lower social class parents, have children with more external LOC. This is because of the personal beliefs, experiences and socialisation practises by the parents of these children. There is a wealth of evidence to suggest that poorer households are more chaotic and with fewer educational facilities to encourage learning.

In this study we also examined childhood intelligence and LOC. Previous studies have established findings on the links between family background and childhood intelligence (Deary et al., 2005; Tong, Baghurst, Vimpani, & McMichael, 2007). There are also studies which have demonstrated a positive relationship between childhood intelligence and LOC at the same age (Von Stumm, Gale, Batty, & Deary, 2009). Many studies on people from many age groups have demonstrated the relationship between IQ and LOC, it being argued that intelligence affords people a whole range of opportunities that increases their sense of personal control and mastery.

In this study we also examine the relationship between self-esteem, personality traits, and behavioural problems (all measured at age 10) and LOC measured six years later. There is a considerable literature on the association between external LOC and depression which suggests that people get into a vicious circle, where fatalism leads to inactivity and negative affect which reinforces the external locus of control beliefs (Hill, 2011).

1.1. Hypotheses

This study explored the effects of a set of childhood factors on teenage locus of control at 16 years using structural equation modelling and drawing on data collected from a large representative population sample in the UK. Its primary aim was to examine the relative power of individual difference factors measured before adolescence particularly intelligence, personality, parental social status indicators (parental

social class and education), and behavioural problems (maternal report) in predicting LOC at sixteen. It was hypothesised that:

- H1.** Parental social status is a significant predictor of LOC at age 16 years;
- H2.** Childhood intelligence (at aged 10) is a significant predictor of LOC at age 16 years;
- H3.** Childhood self-esteem (at aged 10) is a significant predictor of LOC at age 16 years;
- H4.** Childhood trait neuroticism (at aged 10) is a significant predictor of LOC at age 16 years;
- H5.** Childhood behavioural problems (at aged 10) is a significant predictor of LOC at age 16 years;
- H6.** Parental social status, childhood intelligence, self-esteem, trait neuroticism, and behavioural problems would be independent predictors of the outcome variable.

2. Method

2.1. Participants

The study draws on a nationally representative cohort study: the 1970 British Cohort Study (BCS70). The study participants were recruited as part of a perinatal mortality survey. BCS70 comprises 16,571 individuals who were born in Great Britain in a week in April 1970 (Elliott & Shepherd, 2006). The following analysis is based on data collected at birth, age 10, and age 16. The analytic sample comprises 3725 cohort members (57% females), for whom complete data were collected at birth and the follow-ups at age 16. Analysis of response bias in the cohort data showed that the achieved adult samples did not differ from their target sample across a number of critical variables (social class, parental education and gender), despite a slight under-representation of the most disadvantaged groups (Plewis, Calderwood, Hawkes, & Nathan, 2004).

2.2. Measures

1. *Family social background* includes information on parental social class and parental education. Parental social class at birth was measured by the Registrar General's measure of social class (RGSC). RGSC is defined according to occupational status (Marsh, 1986). Where the father was absent, the social class (RGSC) of the mother's father was used. RGSC was coded on a 6-point scale: I professional; II managerial/technical; III skilled non-manual; IIIM skilled manual; IV semi-skilled; and V unskilled occupations (Leete & Fox, 1977). Scores were reversed. Parental education is measured by the age parents had left their full-time education.
2. *Childhood intelligence* was assessed at age 10 using a modified version of the British Ability Scales (BAS) which can serve as a measure for childhood IQ. The assessment involved the administration of four sub-scales: word definitions and word similarities which were used to measure verbal ability, and recall of digits and matrices which were used to measure non-verbal ability. The alpha for the four measures combined into a total scale was .92.
3. *Personality traits* at age 10, teachers were asked to use their knowledge of the study child to assess his/her disposition/temperament with two well-known personality dimensions: Extraversion (described as "An extravert, lively, likes company") and Neuroticism (described as "An anxious child"). These were single item ratings. For each measure scores ranged from 1 (not at all) to 7 (a great deal).
4. *Behavioural problems* at age 10, the parent (mother) was asked to complete the items of the Rutter A scale (Rutter, Tizard, &

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