



## Events associated with stability and change in adult locus of control orientation over a six-year period



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### ARTICLE INFO

#### Keywords:

ALSPAC  
Parental locus of control  
Longitudinal cohort  
Stability over time  
Life stressors

### ABSTRACT

Although locus of control (LOC) has been the focus of thousands of studies we know little about how or if it changes over time and what is associated with change. Our lack of knowledge stems in part from the past use of cross-sectional and not longitudinal methodologies to study small numbers of participants from non-representative populations. The purpose of the present study was to use a longitudinal design with a large representative population to provide relevant information concerning the stability and change of adult LOC. Before the birth of their child, and again six years later, mothers and their partners participating in the Avon Longitudinal Study of Parents and Children (ALSPAC) completed LOC tests and structured stressful events surveys. Analyses revealed that stresses experienced in relationships with spouses, friends and family, financial stability and job security, and illness/smoking were associated with changes in LOC. Results suggest substantial variation of LOC within spousal/parent dyads and moderate stability of LOC over time for both men and women. Stressors associated with change in LOC may be possible candidates when considering interventions to modify LOC expectancies.

### 1. Introduction

The purpose of this project was to examine the stability and change of locus of control (LOC) orientation in adult men and women over a 6 year period, and to identify events associated with LOC stability or change. LOC refers to individuals' generalized expectancy regarding the connection between their behavior and reinforcements received in a problem-solving context (Rotter, 1966).

Individuals who fail to see a connection between what they do and what happens to them and view what happens as the result of luck, fate, chance, or powerful others are *externally controlled*. Conversely, those who tend to perceive a connection between their efforts and what happens to them are *internally controlled*.

Rotter's article stimulated a remarkable amount of research. A search of PsychInfo resulted in 17,812 articles with a keyword "locus of control" as of summer 2015 and with 6600 of these appearing after 1996 (1425 dated 2010–2015). LOC has sustained itself as a concept for psychological study for more than a half century (Nowicki & Duke, 2016).

As there are > 100 different definitions of "locus of control" throughout the literature (Skinner, 1996), researchers need to clearly

state and define which LOC concept and measure is being used (e.g. Reich & Infurna, 2016). Peterson and Stunkard (1992) have noted potential problems that could result from using similar appearing cognates, like *efficacy* (e.g. Infurna & Mayer, 2015; Lachman & Weaver, 1998) or *attribution* (Peterson & Seligman, 1983; Seligman, 1975) interchangeably with *locus of control of reinforcement* as described by Rotter (1966). Rotter defined LOC within his social learning theory (1954, 1966) emphasizing that it is an expectancy that has the capacity to affect behavior differently from situation to situation and has its greatest impact in circumstances that are novel, ambiguous or transitory.

LOC has been related to an ever-growing number of important and significant aspects of human life including *personality characteristics* (e.g. Judge & Bono, 2001; Nowicki & Duke, 1974), *social adjustment difficulties* (e.g., Cheng, Cheung, Chio, & Chan, 2013), *academic achievement* (e.g. Flouri, 2006), *health outcomes* (e.g. Conell-Price & Jamison, 2015), and *business success* (e.g. Kormanik & Rocco, 2009). However, surprisingly little research has been completed concerning the origins of control orientations or their trajectories over time.

Using data gathered from the Avon Longitudinal Study of Parents and Children (ALSPAC), Golding, Iles-Caven, Gregory, and Nowicki

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<https://doi.org/10.1016/j.paid.2018.01.017>

Received 25 September 2017; Received in revised form 9 January 2018; Accepted 12 January 2018

Available online 03 February 2018

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(2017), Golding, Gregory, Iles-Caven, and Nowicki (2017), and Golding, Ellis, Iles-Caven, Gregory, and Nowicki (2017), identified antecedent characteristics of the childhoods that were common to internality in both men and women; these included maternal warmth, being breast fed, having a stable home, and recollection of childhood as happy. Antecedents like these describe a home situation in which children feel comfortable and safe enough to explore their environments and learn more about the possible contingencies existing between their behavior and outcomes. Lefcourt (1976) had earlier theorized a similar set of circumstances underlying the development of appropriate internal control expectancies.

Antecedent information may be helpful in suggesting what might underlie the learning of generalized internal or external control expectancies as well as to offer possible insights into what may be associated with changes in or maintenance of LOC. Unfortunately, since most of the antecedent data have been obtained from studies using cross-sectional methodologies they are inappropriate for objectively describing how individuals' LOC changes over time or, if changes do take place, with what they are associated. Longitudinal data would be valuable in supporting or refuting cross-sectional results describing the development of control expectancies. The purpose of this investigation was to identify events associated with LOC changes over time by analyzing longitudinal LOC data gathered over a 6 year period beginning when the women and their partners were expecting a baby.

Some LOC studies with adults have used LOC pre-post scores as an outcome measure to evaluate the impact of interventions. Unfortunately, in these cases researchers rarely report correlations between pre-post testing of the group not receiving the intervention, as this would be valuable in determining the stability of LOC over time in typical participants. For example, Sørli and Sexton (2004) studied the effects of psychosocial medical and treatment related factors upon change in the Multidimensional Health Locus of Control scale (MHLC) (Wallston, Wallston, & DeVellis, 1978). The MHLC was administered to surgical patients prior to surgery and again four months following discharge. They found a positive relationship with physicians' predicted internality, while severity of illness and subjective feelings of stress were associated with externality. Similar findings were obtained with patients who had undergone heart surgery (Sørli & Sexton, 2004). They too became more internal with the passage of time and involvement with rehabilitation.

Though researchers using the perceived control construct have produced results consistent with those found by Rotter, orientated LOC investigators have primarily studied older rather than younger adults. They used a variety of ways to assess “perceived” control, and not offered construct validity evidence in support of the perceived control measures they used or how they may have related to LOC. For example, in one study (Turiano, Chapman, Agrigoroaei, Infurna & Lachman, 2014) “perceived” control was measured using a 4-item test with a 7-point Likert Scale while in another (Infurna & Okun, 2015) it was assessed by a 6-item scale with a 4-point Likert scale. Because there is an absence of information of how the different perceived control measures correlate with one another or with Rotter's scale, it is difficult to determine if what they are measuring is similar to or different from what researchers have found using Rotter-based LOC scales.

Rather than assessing “perceived” control in middle-aged and older adults, Schneewind (1997) was one of the few researchers to gather test-retest information from younger adults using a scale based on Rotter's definition. The initial test was administered to parents when their child was 10 years old; the retest took place 16 years later. Parents and their children completed German adaptations of LOC scales (Adult and Child Nowicki-Strickland Internal-External scales). LOC was part of a more comprehensive longitudinal study of personality in the context of family development (Schneewind, Ruppert, & Harrow, 1998). Initial data were gathered from a sample of mother-father-child triads recruited from six different German states. The mean age of the children was 12, mothers 39, and fathers 42. Sixteen years later Schneewind and

his colleagues contacted former participants and had 197 triads volunteer to participate in a second assessment.

In this paper we are primarily interested in what Schneewind found regarding parent LOC. At both testing times, mother and father LOC scores were positively correlated, but low (time one,  $r = 0.19$ ; time two,  $r = 0.21$ ). Pre-post LOC correlations for mothers and fathers across the 16 years were what Schneewind called “moderate” and ranged between 0.35 and 0.44.

### 1.1. The present study

Little is known about how LOC expectancies develop and change in adulthood. We lack information about what the LOC association is within spousal or parental dyads, the trajectory of adult LOC over time or what life events are associated with LOC changes over time. Our goal here is to provide such LOC information.

The ALSPAC data set is unique in that it contains LOC scores from both mothers and fathers *before* the child was born and six years later. Thus we can assess the stability of parents' LOC during a critical period of their lives. The absence of previous research made prediction difficult. Relationship theories offer competing predictions. Complementary theorists (e.g., Kiesler, 1982) suggest a negative association between mother and father LOC scores, with one individual being external and the other internal. Similarity perspectives (e.g., Byrne, 1969) suggests that the LOC scores would be similar; internals liking internals and externals liking externals. Based on Schneewind's findings, we predict parents' own pre-post LOC scores would be moderately related to one another over time, but relatively unrelated to one another at pre- and post-times.

Although Schneewind obtained valuable data regarding adult LOC stability and change, he failed to provide any information about what might be associated with changes. The ALSPAC data set includes data concerning the stressors encountered by adults during the six years between the first and second LOC administration. Rotter (1966) and Lefcourt (1976) theorize that internality thrives when individuals are in warm, supportive, relatively stress free environments in which they can learn to perceive the connection between their behavior and outcomes. We predict that greater stress will be related to greater externality.

## 2. Material and methods

### 2.1. The ALSPAC study

This pre-birth cohort was designed to determine the environmental and genetic factors that were associated with health and development of children and their parents (Golding and ALSPAC Study Team, 2004; Boyd et al., 2013). As part of the study design, and in order to determine the parents' backgrounds prior to the birth of the child, there was a concerted effort to obtain details of their personalities, moods and attitudes, including a measure of their LOC, before the birth of the child.

ALSPAC recruited 14,541 pregnant women resident in Avon, UK with expected dates of delivery 1st April 1991 to 31st December 1992. Enrolment strategies included encouragement through the local media, general practitioners, midwives, health services and obstetric hospitals; women then contacted the study center for further information; they were then sent a series of questionnaires to be completed at home. 14,541 is the initial number of pregnancies for which the mother enrolled in the ALSPAC study. Of these there were 14,062 livebirths, of which 13,988 survived to at least 12 months. For full details of all the data collected see the study website: [www.bristol.ac.uk/alspac/researchers/data-access/data-dictionary/](http://www.bristol.ac.uk/alspac/researchers/data-access/data-dictionary/).

Uniquely among the major UK cohort studies at the time it was decided to include the fathers of the children. To this end questionnaires were sent to the mother to pass to her partner if she was happy for him to take part. This strategy was approved by the ALSPAC

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