What's the good of education on our overall quality of life? A simultaneous equation model of education and life satisfaction for Australia

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ABSTRACT

Many economists and educators favour public support for education on the premise that education improves the overall quality of life of citizens. However, little is known about the different pathways through which education shapes people's satisfaction with life overall. One reason for this is because previous studies have traditionally analysed the effect of education on life satisfaction using single-equation models that ignore interrelationships between different theoretical explanatory variables. In order to advance our understanding of how education may be related to overall quality of life, the current study estimates a structural equation model using nationally representative data for Australia to obtain the direct and indirect associations between education and life satisfaction through five different adult outcomes: income, employment, marriage, children, and health. Although we find the estimated direct (or net) effect of education on life satisfaction to be negative and statistically significant in Australia, the total indirect effect is positive, sizeable and statistically significant for both men and women. This implies that misleading conclusions regarding the influence of education on life satisfaction might be obtained if only single-equation models were used in the analysis.

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1. Introduction

Many educators favour public support for education on the premise that education improves the overall quality of life of citizens. However, relatively little is known about the mechanisms – and the relative impacts of these different mechanisms – through which more education actually contributes to people's overall life satisfaction. Much of the research in this area typically reports only the estimated contemporaneous relationship between education and life satisfaction once income and other socio-economic variables are controlled for (Frey and Stutzer, 2000; Blanchflower and Oswald, 2004; Headey, Muffels, and Wooden, 2008; Powdthavee, 2008). Unfortunately, since income and other indicators of socio-economic status (e.g., employment and marital status) are themselves a function of education, simply running a single-equation model in which both education and other adult outcomes are entered on the right-hand side tells us little about the relative importance of the different pathways

through which education can enhance (or even in some cases, reduce) overall life satisfaction.

While income is naturally viewed as the main mediating factor of education on a person's well-being (Diener et al., 1993; Clark, Frijters, and Shields, 2008a, Powdthavee, 2010a), many scholars have argued that education plays a much more important role in influencing individual's life satisfaction through non-monetary channels than through its impact on one's financial status (Brighouse, 2006; Michalos, 2008). In a comprehensive review of the non-pecuniary benefits of education, Oreopoulos and Salvanes (2011) concluded that education was one of the most important predictors of one's health status, employability, and probability of being married, all well-known predictors of life satisfaction (Oswald, 1997; Layard, 2005; Layard et al., 2013).[1] In a more direct test of the indirect effects of education on happiness, Chen (2012) used data from four East Asian countries to show that the statistical association between education and happiness is mediated more by non-pecuniary factors, such as the

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[1] They also acknowledged that more education might also bring along with it added stress and constraints on time, thus leading to the possibility that education could also have a negative impact on overall life satisfaction.

strength of social networks and cosmopolitan experiences, than income. Empirical evidence in this area, however, remains scarce, and the extent of any indirect effects of education on life satisfaction remains imperfectly understood.

We aim to fill this research gap by testing whether findings on the overall effect of education on life satisfaction are sensitive to the choice of estimation strategy, and in particular the use of a structural equation model rather than the more conventional single-equation approach. We propose that, in order to better understand the different pathways through which education predicts people's overall quality of life, an empirical test has to have a number of special features. First, we must be able to estimate the amount of variation in the potential mediating factors (which, in our case, are contemporaneous adult outcomes measured at the same time as life satisfaction) explained by education. Second, we must also be able to simultaneously determine how these variations in the potential mediating factors explain life satisfaction.

Using longitudinal data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey, and covering the period 2001–2010, we estimate a structural equation model that allows us to simultaneously compare the relative indirect associations between education and life satisfaction through five different adult outcomes: income, employment, marriage, children, and health. In addition to this, we also want to be able to shed some lights on the following two questions:

(i) Are the pathways through which education influences life satisfaction the same for men and women?

(ii) How stable are these estimated indirect effects over time?

By answering these questions we provide powerful, new and more comprehensive insights into how education can be associated with having a more satisfying life and what matters most in that process.

There is also another important reason for choosing the HILDA Survey for our analysis. Previous studies that have used this popular data set have often found education to be correlated negatively and statistically significantly with life satisfaction in regression equations where income, health, and other socio-economic variables are controlled for in a single-equation model (e.g., Shields, Wheatley-Price, and Wooden, 2009; Green, 2011; Ambrey and Fleming, 2014), which could potentially lead to a loose and largely incorrect interpretation of education being welfare reducing in Australia. Hence, one of our objectives is to test the hypothesis that the combined indirect effect of education on life satisfaction is positive, sizeable and statistically significant even though the direct (or net) effect is not.[2]

The paper is structured as followed. Section 2 summarises previous relevant literature. Section 3 briefly discusses the data and the empirical strategy. Results are reported in Section 4. Section 5 discusses and concludes.

2. Background

2.1. Previous research on the relationship between education and life satisfaction

Previous studies have used single-equation models to establish the link between education and measures of life satisfaction and have produced mixed results. Using highest education qualification dummies as control variables in cross-section regression equations, many scholars have found a positive and statistically significant association between education and self-rated life satisfaction across different international data sets and time periods (e.g., Blanchflower and Oswald, 2004; Easterlin, 2001; Ferrer-i-Carbonell, 2005; Graham and Pettinato, 2002). Yet there have also been other studies that have documented either a negative or a statistically insignificant effect of education on the way people report their satisfaction with life overall (e.g., Melin, Fugl-Meyer, and Fugl-Meyer, 2003; Flouri, 2004; Powdthavee, 2008; Shields, Wheatley-Price, and Wooden, 2009).

One explanation for these mixed findings is that both direction and magnitude of the coefficient on education in a life satisfaction regression equation are often sensitive to the inclusion of other variables in the model (Dolan, Peasgood, and White, 2008). For example, controlling for potential outcomes of education, such as income and health, in a life satisfaction regression equation will tend to produce a coefficient that underestimates the full contribution which education is making to life satisfaction.

While most researchers know this to be the case, little attempt has been made to decompose the overall effect of education on life satisfaction into direct and indirect effects and study them individually. Consequently, previous research tends to refrain from over-interpreting the coefficient on education in a life satisfaction regression equation, citing it only as a control variable that needs to be interpreted with caution given the presence of other endogenous variables in the model.

2.2. Accounting for the links between education and different adult outcomes

Previous research, especially by economists, has highlighted financial returns as one of the main benefits that people receive from investing in additional human capital (e.g., Angrist and Krueger, 1991; Harmon and Walker, 1995; Leigh and Ryan, 2008). Using data sets across countries and time periods, researchers have often reported the rate of financial return to education to be economically sizeable, statistically significant, and to have causal interpretations; for example, education allows individuals to become (or at least, be "perceived" as) more efficient and productive in the labor market, leading them to earn more than their less educated counterparts (for a comprehensive review of this literature, see Psacharopoulos and Patrinos, 2004).

However, many educational philosophers and researchers (e.g., Brighouse, 2006; Michalos, 2008) have argued that monetary gains are not the main benefit from education. Rather, it is the non-pecuniary gains, such as better health and stability in family life, where the real value of investment in human capital lies. These sentiments are reflected in recent empirical work in economics. According to a review by Oreopoulos and Salvanes (2011, p. 159):

"In the traditional investment model, [education] itself is treated as a black box: individuals enter, something happens, and productivity (usually defined in terms of one-dimensional skill) increases. A look inside the box, however, reveals that [education] generates many experiences and affect multiple dimensions of skill that, in turn, may affect central aspects of individual's lives both in and outside the labor market."

What researchers in this area have found is that education affects not only individual income, but also enables individuals to make better decisions about health, marriage and family life. For example, studies have found individuals with more schooling to have, on average, better mental and physical health outcomes (Lleras-Muney, 2005; Siles, 2009; Powdthavee, 2010b). More educated individuals are also significantly less likely to be unemployed and when unemployed, do not remain unemployed for very long (Mincer, 1991; Kettunen, 1997).

Some researchers have also found that education not only makes individuals more attractive in the labor market, but also more attractive in other settings. Men and women with more earnings potential or with higher prestige jobs are typically seen as relatively

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[2] The negative correlation between education and life satisfaction has also often been found in studies that used the British Household Panel Survey (BHPS). For example, see Powdthavee (2008, 2010a).