

# The Nature of Nurture: A Reconciliation of Intuition and Empirical Findings Regarding the Long-Term Effects of Parenting on Child Outcome

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## ABSTRACT

Results from large-scale twin and adoption studies over the last several decades have ostensibly suggested that parenting practices have little or no effect on the long-term outcome of children. This paper aims to reconcile these counterintuitive empirical findings with the intuition that the way children are raised by their parents certainly does have an effect on the people they eventually become. Specifically, the discrepancy between *who we believe ourselves to be* based on our idiosyncratic life histories, and *who we are measured to be* via standardized psychological tests is highlighted, and discussed.

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## Résumé

Les résultats d'études à grande échelle sur les jumeaux et de l'adoption au cours des dernières décennies ont manifestement suggéré que les pratiques de parentage n'ont que peu ou pas d'effets sur les résultats à long terme des enfants. Cet article vise à réconcilier ces conclusions empiriques contre-intuitives avec l'intuition que la façon pour les parents d'élever l'enfant a certainement un effet sur la personne qu'il deviendra éventuellement. Tout particulièrement, l'écart entre qui nous croyons être d'après sur notre vécu idiosyncratiques et la mesure de ce que nous allons être déterminé par des tests psychologiques standardisés est mis en lumière et décrit.



Why is it that the trajectory of some children will lead them to become successful productive professionals with rich social and familial relationships, while other children seem to just as naturally develop maladaptive patterns of behaviour and social interaction leading to psychopathology and social deviance? Today, the notion that both nature and nurture play causal roles in both the short and long-term outcomes of children is not particularly controversial.

However, what has been controversial over the last several decades is the role of parenting specifically (Harris, 1998). Is it the case that parents shape the future personalities and intelligences of their children via carefully planned parenting behaviours and practices, or would children generally turn out similarly in the long term given *any* set of parents that cared for and nurtured the child within the 'normal' (i.e. non-abusive, and non-neglectful) range of parenting behaviours? In an attempt to provide a meaningful answer to this question, this paper will briefly summarize both the intuitive arguments for the long-term effects of parenting on child outcome, and the scientific findings from the field of behavioural genetics that seem to refute this intuition. More importantly, this paper will attempt to reconcile these seemingly contradictory positions by highlighting the differences between *who we believe ourselves to be* as people, and *who we are measured to be* via standardized psychological tests.

To some, questioning the effects of parenting on the outcome of children will seem heretical. The effect of parenting on children might be considered so intuitive that no amount of empirical investigation is necessary to confirm it, and no amount of empirical evidence would be sufficient to deny it. Children of parents who foster secure forms of attachment and treat them with respect generally show more stable patterns of positive social interaction throughout their lives than children of parents who limit their child's sense of self-worth or treat them harshly (Harris, 1998). To only slightly oversimplify: better parenting produces better outcomes for children. Harris (1998, p. 2) sums up the popular sentiment succinctly: "Nature gives the parents a baby; the end result depends on how they nurture it. Good nurturing can make up for many of nature's mistakes; lack of nurturing can trash nature's best efforts."

However, empirical evidence has been steadily building against this conventional wisdom for several decades via behavioural genetic studies that have rigorously examined the causal role of genetics in contributing to child outcome. In 2000, psychologist Eric Turkheimer began a comprehen-

sive overview of behavioural genetic findings with a bold statement: "The nature nurture debate is over. The bottom line is that everything is heritable..." (Turkheimer, 2000, p. 160). He even went as far as to say that the ubiquity of genetic influences on behaviour ought to be "enshrined as the first law of behavioural genetics." He cited results from major twin studies such as that of Bouchard, Lykken, McGue, Segal and Tellegen (1990) who reported results from the Minnesota Study of Twins Reared Apart. This study found that correlations between identical twins raised apart were highly concordant with scores for identical twins raised together for a staggering number of variables ranging from standard psychological assessments such as mental ability and personality, to more eclectic dimensions of human variation such as social attitudes including religiosity and traditionalism. These findings are surprising, especially for those who would believe that parenting and rearing environment play a large role in development, in which case these scores should be highly discordant (Bouchard et al., 1990). More recent behavioural genetic studies of this type have replicated these results and provided a more nuanced view of heritability, and have even shown very specific traits to be heritable including dependence on alcohol or nicotine, likelihood of divorcing, and even the number of hours of television watched (Bouchard, 2004).

Turkheimer's controversial statements in rebutting the conventional wisdom of the effects of parenting did not stop with his first law – he went on to name two more:

The Second Law: the effect of being raised in the same family is smaller than the effect of genes.

The Third Law: a substantial portion of the variation in complex human behavioural traits is not accounted for by the effects of genes or families.

Where the calculations of heritability used to substantiate Turkheimer's first law are fairly simple, the calculations required to substantiate the second and third laws are slightly more conceptually complex. Straight heritability estimates can be calculated in a number of ways, the simplest of which is taking an average of the correlations between identical twins reared apart on any given trait. Pairs in this unique population are genetically identical and share none of the rearing environment. Thus, if on average there is a correlation of .69 between scores of intelligence between identical twins, the heritability of that trait can be said to be .69, or that 69% of the variance in intelligence scores in that sample is caused by the genetic component (Bouchard & McGue, 2003; Plomin, Ashbury, & Dunn, 2001).

Substantiating Turkheimer's second law requires parsing the variation observed in human traits into two additional components: shared environment (all the things that siblings reared together might be expected to share such as family and parenting), and non-shared environment (all of the environmental experiences that siblings reared together would not share including idiosyncratic events of both pos-

itive and negative influence – e.g. a chance meeting with a life-altering individual, or contracting a life-threatening virus). The effects of the shared environment can be calculated by subtracting the heritability value for a given trait, which is a measure of only the genetic contributions to variance, from the average correlation observed between identical twins reared together, which is a measure of both the genetic contributions *and* the effects of being reared together. Finally, the third component, non-shared environment, can be calculated by subtracting the correlation between identical twins raised together (who share genes and environment) from 1, leaving only the effects not accounted for by genes or shared environment. Results from large-scale twin studies examining the relative contributions of these three components of variance have delivered consistent results. Across traits, genes account for roughly 50% of the variation, unique or non-shared environment contributes the other 50% and the shared environment (the proportion of the variance which includes the effect of parents and rearing environments) is often measured to be zero, or a very small percentage if its value reaches significance at all (Bouchard et al., 1990; Pinker, 2002). These findings imply that on average, adult siblings are equally similar on measured psychological variables regardless of whether they were reared in the same home, adoptive siblings are no more similar than two people chosen at random on these measures, and identical twins are no more similar than we should expect on the basis of genetic similarity alone. Finally, Turkheimer's third law follows directly from the first two. So long as estimates of heritability are greater than zero, and estimates of the shared environment hover around zero, a large proportion of the variance in any given trait will be caused by factors that do not relate to either nature or nurture, but other unknown aspects of one's individual environment.

Large-scale investigations utilizing twin and adoption designs like those mentioned above are powerful tests of the effects of parenting on the long term outcomes of children (Pinker, 2002). Despite the huge variation in parenting styles, behaviours, and rearing environments, conventional wisdom holds that two children growing up in the same home should turn out more similar than two people selected at random. That is, "If *anything* that parents do affects their children in *any* systematic way, then children growing up with the same parents will turn out more similar than children growing up with different parents. But they don't" (Pinker, 2002, p. 384). Thus, the two options that remain, as pointed out as early as 1983 by Maccoby and Martin, are that either 1) the particular effects of parenting are the cause of very little, if any, of the variation in psychological traits (i.e. giving rise to the idea parents have no long-term effects on their children); or, 2) that the effects that parents do have on children are unique for each child in the home. If parenting styles and practices have different effects on different children, and additionally, if those ef-

facts in aggregate account for a very, very small portion of the variance in any measured psychological trait (as per the second law), then what would be to gain from attempting to alter any parenting style at all? If this were the case, changes that would benefit some children would proportionately handicap others.

Thus, the picture painted by modern behavioural genetics is not one of genetic determinism as might be thought upon first consideration of the three laws of behavioural genetics, but rather a puzzle: genetics reliably account for roughly 50% of the variation in any given psychological trait, and the other 50% are accounted for by *something* in the environment. But whatever that *something* is, it cannot be shared between two children growing up in the same home, which rules out all of the causal factors espoused by conventional wisdom on parenting and child rearing (Pinker, 2002).

So, do parents have long term effects on the outcome of their children? Do parents matter? Before answering this question, it is important to qualify what exactly this question is asking, and more importantly, what it is not. First, the question is not asking whether or not children could raise themselves in the *absence* of their parents. Parents undoubtedly care for and protect their children in essential ways that foster development through to adulthood (Harris, 1998). Rather, the question is, would children turn out more or less the same in terms of *measurable psychological traits* if they had been raised by a different set of parents? In this regard, behavioural genetic studies indicate rather conclusively that they would. Second, the question is not asking whether or not parents have the ability to cause physical or psychological damage to their children – recent empirical work has confirmed longstanding intuitions that the experience of maltreatment itself can and does cause lasting psychological harm (Jonson-Reid et al., 2010).

However, even with this modifier for situations involving maltreatment, the empirically derived three laws are hard to reconcile with our experientially derived intuitions about good parenting contributing to good outcome in childhood and beyond. Why? Because there is a disconnect between who each of us believes we are, and who we are measured to be via standardized psychological tests. Standardized tests of intelligence, personality, psychopathology, or any

other psychological trait of interest are purposely void of personalizing content relevant to the specifics of our idiosyncratic developmental trajectory. Thus, it may be the case that if raised by a different set of parents within the normal range, we may have answered questions assessing our intelligence or personality in strikingly similar ways; however we would also likely *not* say that who we are as human beings was well captured within our responses to those psychological measures. Rather, who we are as human beings, on a personal level is tightly intertwined with our specific and individual trajectory through life, of which our parents and other significant caregivers are doubtlessly an integral part. So, to say that parents don't matter is technically true in one highly specified sense; however I would argue that this is not the same sense in which each of us would like to believe that our parents matter to us.

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